TECHNICAL UNIVERSITY OF CLUJ-NAPOCA ROMANIA

Research Reports

2021

MINISTRY OF EDUCATION

TECHNICAL UNIVERSITY
OF CLUJ-NAPOCA, ROMANIA

RESEARCH REPORTS

2021

UTPRESS
Cluj-Napoca, February 2022

The Research Strategy of the Technical University of Cluj-Napoca for 2020-2024,
(Extract from the Strategic Plan of the Technical University of Cluj-Napoca for 2020-2024)

Mission
"Our mission is to develop value in people, processes and products. In this sense, we will pursue the achievement at a high level of quality of advanced scientific education and research, in specific fields, in national and international context, responding to the needs of intellectual, professional and social development of the individual and the progress of Romanian society." (Carta Universitatii Tehnice din Cluj-Napoca)

The mission assumed by the entire academic body of UTCN, is focused on:

- Reshaping and adapting education, scientific research, innovation and artistic creation to the needs and expectations of society;
- Cultivating the values, skills and abilities necessary for full integration into the European area of excellence in education, artistic creation, research and innovation;
- the digitization of educational and administrative processes to improve quality and institutional performance;
- the expansion of the international dimension in order to guarantee access to the category of world-class universities according to the criteria of the QS STARS RATING SYSTEM or other relevant rankings.

Vision
The vision of the Technical University of Cluj-Napoca is an ambitious one, and that is to become a university strongly anchored in the European area of education, research, innovation and digitization by promoting and supporting performance and excellence in all areas of activity in order to ensure substantial progress regarding quality, performance, attractiveness and international competitiveness.
Strengthening the position of a top-class research university by supporting, promoting and securing investments in the fields of research, technology transfer and artistic creation with performance potential and great effects on the prestige, reputation and international visibility of the UTCN is a major desideratum for the next Period.

Values
The proposed vision can become a reality only and only through the full involvement and contribution of each of us in a joint and focused effort to achieve the University's strategic goals, such as play an essential role in increasing academic, scientific and management performance, in supporting our own ideas and projects.

Directions of action in the field of research

- Achievement of the university status "HR Excellence in Research", which is granted by the EC to the institutions that implements and applies the principles of the Code & Book(Carta), as defined in the program "The Human Resource Strategy for Researchers - HRS4R ", as an institutional commitment to ensure the framework for the development and promotion of highly qualified human resources in research;
- The establishment of a multidisciplinary research institute for the purpose of multiplication, expansion and Leveraging best practices, expertise and academic achievements acquired in strategic areas and ensuring the international reputation and visibility of the university;
- Support for teams participating in and / or applying for major projects in priority areas under the EU Framework Program for Research and Innovation, Horizon 2020 and / or Horizon Europe 2021-2027 or other major projects with national and / or international funding;

- Developing, supporting and promoting the directions of research, technology transfer and innovation that can generate a competitive advantage for the university at local, national or international level;

- Improving the institutional framework to improve quality and performance indicators scientific, relevant in the CNFIS reports to obtain additional funding and / or in respected international rankings;

- Development of incentive, support and promotion mechanisms for co-opting and participation Students in high performing research teams with national and / or international visibility to develop research and project management skills and competencies;

- Establish the internal regulatory framework for the development of the entrepreneurial ecosystem to facilitate the creation and support of business start-ups among undergraduate and graduate students.

Professor Vasile Topa PhD
Rector

FOREWORD

Scientific research is an inexhaustible source of knowledge, an important resource of society, while constituting an approach to university education as well.

The Technical University of Cluj-Napoca, one of the 12 universities of “advanced research and education" in Romania, aims at engaging itself in producing outstanding scientific results and approaching interdisciplinary and multidisciplinary subjects. Furthermore, it strives to integrate the research results in the exchange of national and international values, to increase its national and international visibility, and also attract and create highly skilled human resources.

Achieving these goals must strengthen its already established position as a university of "advanced research and education", and the recognition of the Technical University of Cluj-Napoca as a center of excellence in scientific research with a high impact on the social and economic environment.

Scientific research, by its creative nature, represents one of the most important methods both in teacher or researcher training and in educating university students in the spirit of innovation, irrespective of study level.

In the Technical University of Cluj-Napoca basic and applied research, as well as innovation are promoted. The research topics cover the fields of engineering, science, and humanities.
Research is conducted at department level, predominantly in over 70 accredited research structures. The new research strategy aims at creating self-sustainable interdisciplinary and multidisciplinary structures capable of outstanding scientific achievements, integrated within a multidisciplinary research institute.

The coordination of the scientific research is performed by academic staff experienced in research, and especially by PhD advisors relying on the broad involvement of the faculty, the young researchers, and the students.

Research teams enjoy the freedom of choosing their research topics, but their activities are in line with the national and international policy comprised within the strategy of research - development – innovation.

The goal of this volume is to present both the research structures existing in the Technical University of Cluj-Napoca as well as the results achieved by these in the past five years. The expected result of the volume is to enhance the cooperation between the research structures of the Technical University and other national and international structures.

Professor Florin-Ioan Oniga PhD

Vice-Rector in charge of Scientific Research

TABLE OF CONTENTS

1.1.5. INDUSTRIAL ENGINEERING AND MANAGEMENT

1.1.6. MATERIALS ENGINEERING

1.1.7. MECHANICAL ENGINEERING, MECHATRONICS AND ROBOTICS

1.1.8. SYSTEMS ENGINEERING

1.2. MATHEMATICS AND NATURAL SCIENCES

1.2.1. CHEMISTRY AND BIOLOGY

1.2.2. EARTH SCIENCE

1.2.3. MATHEMATICS AND INFORMATICS

1.2.4. PHYSICS

1.3. HUMANITIES AND ARTS

1.3.1. ARCHITECTURE

1.3.2. PHILOLOGY

2. RESEARCH PUBLICATIONS

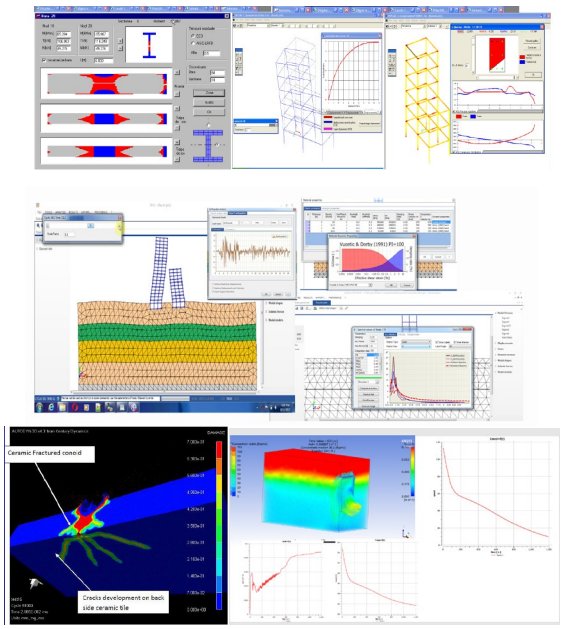
3. RESEARCH PATENTS

RESEARCH REPORTS

COMPUTATIONAL MODELING AND ADVANCED SIMULATION IN STRUCTURAL AND GEOTECHNICAL ENGINEERING

Contact details

Name	**Computational Modeling and Advanced Simulation in Structural and Geotechnical Engineering**
Acronym	**CMASSGE**
Logo	
Site	https://www.cosminchiorean.com/CMASSGE.pdf
Address	15 C Daicoviciu Str., 400020, Cluj-Napoca, Romania (http://constructii.utcluj.ro/departamentul_mecanica_constructiilor.php)
Faculty Department	**Faculty of Civil Engineering** **Structural Mechanics Department**
Telephone	+40 264 401345
Fax	+40 264 594967
Director	Prof. Dr. Eng. Cosmin G Chiorean
e-mail	cosmin.chiorean@mecon.utcluj.ro



Areas of expertise

Domain: Civil Engineering-*Structural and Geotechnical Engineering*
Computational and experimental techniques with emphasis on the development and application of *advanced nonlinear analysis of structural limit states, structural stability*, *progressive collapse analysis of structures*, *push-over analysis for seismic performance evaluation of structures*, *analysis of structures subjected to wind actions*, *finite element simulation of composite materials subjected to extreme loads such as ballistic impact and explosions, design and behaviour of composite steel-concrete structures, and application of FEM for geotechnical problems and multiphysics problems*. Advanced Computational Fluid Dynamics (CFD) models to identify the mechanisms of radon accumulation and developing techniques for reducing radon accumulation in homes. The stability of thin-walled members by using the *Generalised Beam Theory*. The stiffness evaluation of the vertical and horizontal joints between precast RC walls. The structural health monitoring of bridges by *Machine Learning algorithms trained on experimental and FE numerical data*.

Team (Key researchers)

The CMASSGE research structure coordinated by **Prof. Cosmin G Chiorean**, encloses five research groups coordinated by the representative researchers from Structural Mechanics Department (MECON):

- Advanced Nonlinear Analysis Models for Structures & Soils (**Dr. Marius Buru**)
- Stability and Structural Health Monitoring of Structures (**Dr. Mihai Nedelcu**)
- Advanced Multiphysics FEM Modelling & Artificial Inteligence (**Dr. Marius Botos**)
- Advanced Testing and Experimental Procedures for Structures (**Dr. Ovidiu Prodan**)
- Advanced FEM Modeling of Structures (**Dr. Mircea Botez**)

Representative projects

Smart Systems for Public Safety through Control and Mitigation of Residential Radon linked with Energy Efficiency Optimization of Buildings in Romanian Major Urban Agglomerations" Code: SMART-RAD-EN:2017-2020-A1-A1; POC-A1-A1.1.4-E-2015 (http://www.smartradon.ro/)
Integrated design, earthquake check and shelf structures offer, Code: PN-III-P2-2.1-CI-2017-0113, http://users.utcluj.ro/~mnedelcu/Proiect%20de%20cercetare_15CI.htm
Technology for measuring forces in tensile cables, Code: PN-III-P2-2.1-CI-2017-0116, http://users.utcluj.ro/~mnedelcu/Proiect%20de%20cercetare_29CI.htm
Design and seismic performance evaluation of 3D frame structures using advanced nonlinear static analysis method (granted by CNCSIS, PNII-IDEI 193/2008)- http://www.cosminchiorean.com/projects.html

Significant results

The most representative publications of the past 5 years:
1. C.G. Chiorean, D. Passera, R. Ferrari, E. Rizzi, "An implementation for 2nd-order M-N coupling and geometric stiffness adaptation in tapered beam-column elements", *ENGINEERING STRUCTURES* (ELSEVIER), 225, 111241,

2020.
2. Burghele, B.D, Botos M. et al "Comprehensive survey on radon mitigation and indoor air quality in energy efficient buildings from, *SCIENCE OF THE TOTAL ENVIRONMENT* (ELSEVIER), 751, 141858, 2021.
3. A.A. Muresan, M. Nedelcu, R. Goncalves, GBT-based FE formulation to analyse the buckling behaviour of isotropic conical shells with circular cross-section, *THIN-WALLED STRUCTURES* (*ELSEVIER*), 134 , 84-101, 2019
4. R. Moga, S. Buru, CG Chiorean, Overall stress in periodontal ligament under orthodontic movement during a periodontal breakdown, *AMERICAN JOURNAL OF ORTHODONTICS AND DENTOFACIAL ORTHOPEDICS (ELSEVIER),* 2021.
5. L.A. Bredean, M.D. Botez, "The influence of beams and the slabs effect on the progressive collapse resisting mechanisms developed for RC framed structures", *ENGINEERING FAILURE ANALYSIS* (*ELSEVIER*), 91, 527-542, 2018.
6. C. G. Chiorean, "Second-order flexibility-based model for nonlinear inelastic analysis of 3D semi-rigid steel frameworks," *ENGINEERING STRUCTURES* (*ELSEVIER*), 136, 547-579, 2017.
7. C. G. Chiorean and S. M. Buru, "Practical nonlinear inelastic analysis method of composite steel-concrete beams with partial composite action" *ENGINEERING STRUCTURES* (ELSEVIER), 134, 74-106, 2017.
8. C. G. Chiorean and I. V. Marchis, "A second-order flexibility-based model for steel frames of tapered members," *JOURNAL OF CONSTRUCTIONAL STEEL RESEARCH* (ELSEVIER), 132, 43-71, 2017.
9. Nedelcu M., Generalisation of the Ayrton-Perry formula for the global-distortional-local buckling of thin-walled members, *THIN-WALLED STRUCTURES* (ELSEVIER), 118, 73-86, 2017.
10. Almeida J, Prodan O., Tarquini D., Bayer K. "Influence of Lap Splices on the Deformation Capacity of RC Walls. I: Database Assembly, Recent Experimental Data, and Findings for Model Development", *JOURNAL OF STRUCTURAL ENGINEERING (ASCE)*, 143 (2), 2017.

Software developed

GFAS & RSL2D – (*A Finite Element System for Geotechnical Applications*) a product developed for Geostru Corporation (www.geostru.com) is a finite element package that has been developed specifically for the analysis of deformation and stability analysis in geotechnical engineering problems and local seismic response. http://www.geostru.com/EN/Geotechnical-and-F.E.M.-analysis-system.aspx

NEFCAD & ASEP – Advanced Nonlinear Inelastic Analysis System for Seismic Performance Evaluation of 3D Steel and Composite Steel-Concrete Frameworks (http://www.cosminchiorean.com/software.html)

The offer addressed to the economic environment

Research & development	**Development of advanced nonlinear analysis methods** able to describe the complex behaviour of 3D steel, RC and composite steel-concrete frame structures, *under normal and abnormal loads*. Ultimate strength analysis and design of composite-steel concrete cross-sections with arbitrary shapes subjected to biaxial bending and axial force at elevated temperatures; Computer automated optimal structural design in seismic zones based on structural performance criteria; Analysis of structures subjected to extreme actions. **Development of specialized software concerning application of nonlinear analysis to describe complex behaviour of frame structures. The stability of thin-walled members by using the Generalised Beam Theory**. The elastic buckling behaviour of rectangular plates with initial geometric imperfections by using energy methods and trigonometric series approximation of the displacements field. The elasto-plastic behaviour of the joints between the precast RC members. The optimisation of scaling for testing the RC walls under cyclic lateral loading. The stiffness evaluation of the vertical and horizontal joints between precast RC walls. **The structural health monitoring of bridges by Machine Learning algorithms trained on experimental and FE numerical data**. The effect of FRP strengthening on hollow-core slabs. **Application of FEM in geotechnical and multiphysics problems:** Development of general purpose and dedicated purpose finite element package (GFAS) specifically for the analysis of deformation and stability analysis in geotechnical engineering problems. **Advanced Computational Fluid Dynamics (CFD) models** to identify the mechanisms of radon accumulation and developing techniques for reducing radon accumulation in homes**. Numerical simulation of ballistic impact on composite laminated plates:** The ballistic performance of the lightweight armour systems can be examined to obtain an estimate for the V50 and the global damage of the composite plates.
Consulting	Application of nonlinear analysis methods for seismic performance evaluation of spatial structures; Application of FEM in structural and geotechnical engineering; Composite materials, Thin-walled structures, Experimental techniques.
Applied engineering services	Advanced analysis and Design of Structural Systems in Civil and Geotechnical Engineering. Software development for structural and geotechnical engineering.
Training	Advanced software applications such as: Abaqus, Ansys, GFAS, TrueGrid, MatLab; Extreme Loadings, Open Sees, etc. Application of nonlinear analysis for seismic performance evaluation of spatial structures; Application of FEM in Structural and Geotechnical Engineering and Multiphysics (CFD).

BUILDING MATERIALS RESEARCH GROUP

Contact details

Name	**Building Materials Research Group**
Acronym	**BURG**
Logo	BURG
Site	http://burg.utcluj.ro/
Address	25, G. Baritiu Street 400027 Cluj-Napoca, România
Faculty Department	**Faculty of Civil Engineering** **Department of Civil Engineering and Management**
Telephone	+40264401548
Fax	---
Director	Prof. Dr. Eng. Daniela Lucia MANEA
e-mail	daniela.manea@ccm.utcluj.ro

Areas of expertise

Civil engineering
- materials chemistry;
- green building materials;
- sustainable development;
- quality control of building materials;
- recovery of industrial waste in construction materials;
- influence of construction materials on health and environment;
- „In situ" determination of mechanical strengths by non-destructive methods.

Team

Prof. Dr. Eng. Daniela Lucia Manea; Assoc. Prof. Dr. Eng. Claudiu Aciu; Assoc. Prof. Dr. Eng. Dana Adriana Ilutiu-Varvara; Assist. Prof. Dr. Eng. Elena JUMATE; Assist. Prof. Dr. Eng. Florin Babota; Assist. Dr. Eng. Luminița Monica Pleșa; Assist. Dr. Eng. Răzvan Andrei Iernuțan; Dr. Eng. Raluca Fernea; Dr. Eng. Cornelia Baeră; Dr. Eng. Gabriela Adelar Călătan; Dr. Eng. Adrian-Victor Lăzărescu, Phd Students: Eng. Iacob Florea; Eng. Alexandra Olga Pintea; Eng. Denes Tunde-Orsolya; Eng. Cadar Daniel; Coroian Adrian; Buhus Zaharie Anamaria; Cabas Dana; Siomin Adrian; Tintisan Coniac Maria Loredana.

Representative projects

"Studies and researches regarding the reduction of **the negative environmental impact** of the pollutants **and solid wastes from the steelmaking",** "Development and support of multidisciplinary postdoctoral programmes in major technical areas of national strategy of Research - Development - Innovation" **4D-POSTDOC**, contract no. POSDRU/89/1.5/S/52603, project co-funded by the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, http://193.226.17.4:8080/sites/fordoc/default.aspx (2010-2013).
"Innovative Ecological Materials in Construction: A Multicriteria Analysis for Optimizing the Choice of Sustainable Building Materials in the Context of Sustainable Development" (2014 – 2015) – Post-Doctoral Programme POSDRU/159/1.5/S/137516, project co-funded from European Social Fund through the Human Resources Sectorial Operational Program 2007-2013.
"Studies of methods to optimize the use of sludge in the building materials industry", Internal competition for Research/ Development/ Innovation. Project C.I. type 1.1-T5 / 2016, Technical University of Cluj-Napoca (2016-2017).
"Research concerning the **characterization of the oily mill scale in order** to identify a optimum method **for reduction of the quantities of hazardous wastes landfilled**", Internal competition for Research/ Development/ Innovation –Project 16362/07.07.2016, C.I. type 1.1 - T4, Technical University of Cluj-Napoca (2016-2017).

Significant results

1. Raluca Ștoan, Daniela R. Tămaș-Gavrea, Daniela L. Manea. “Experimental Investigations on the Performances of Composite Building Materials Based on Industrial Crops and Volcanic Rocks”, Crystals 2020, 10, 102.
2. Soimosan Melania; Moga Ligia; Danku Gelu; Cazila Aurica; Manea Daniela. ” Assessing the Energy Performance of Solar Thermal Energy for Heat Production in Urban Areas: A Case Study”, ENERGIES, 12(6), 2019.
3. Pintea Alexandra Olga; Manea Daniela Lucia. “New types of mortars obtained by aditiving traditional mortars with natural polymers to increase physico-mechanical performances”, Procedia Manufacturing, 32(2019): 201-207.
4. Fernea Raluca; Manea Daniela Lucia; Plesa Luminita; Iernutan Razvan; Dumirtran, Mihaela. “Acoustic and thermal properties of hemp-cement building materials”, Procedia Manufacturing, 32(2019): 208-215.
5. Florea Iacob; Jumate Elena; Manea Daniela Lucia; Fechete Radu. “NMR Study on New Natural Building Materials”, Procedia Manufacturing, 32(2019): 224-229.
6. Denes Orsolya; Florea Iacob; Manea, Daniela Lucia. “Utilization of Sheep Wool as a Building Material”, Procedia Manufacturing, 32(2019):236-241.
7. Orban, Yvette Anna; Manea, Daniela Lucia; Aciu, Claudiu, “Study of methods for simulating multiphase construction materials”, Procedia Manufacturing, 22(2018): 256-261.
8. Orban, Yvette Anna; Manea, Daniela Lucia; Aciu, Claudiu; et al.,”Virtual manufacturing and mechanical properties of synthetic fiber-reinforced mortars”. Procedia Manufacturing, 22(2018): 262-267.
9. Aciu Claudiu; Ilutiu-Varvara Dana-Adriana; Manea Daniela-Lucia; Orban Yvette-Anna; Babota Florin. “Recycling of plastic waste materials in the composition of ecological mortars”, Procedia Manufacturing, 22(2018): 274-279
10. Jumate, E.; Aciu, C.; Manea, D. L.; et al., “Plastering Mortar with Antibacterial and Antifungal Properties Studied By H-1 NMR relaxometry”, AIP Conference Proceedings, Vol. 1917, Published: 2017.
11. E. Jumate, D. Moldovan, D. Manea, D. Demco, R. Fechete, "The Effects of Cellulose Ethers and Limestone Fillers in Portland Cement-Based Mortars by H-1 NMR relaxometry," Applied Magnetic Resonance, 47(2016):1353–1373.
12. L. Molnar, D. Manea, “New Types of Plastering Mortars Based on Marble Powder Slime”, Procedia Technology, Elsevier, Vol.22, pp.251-258, 2016.
13. C. Aciu, C. Roman, D.A. Iluţiu - Varvara, C. Puia, O. Cadar. Plastering Mortar with Antibacterial and Antifungal Properties. *Romanian Journal of Materials* 2016, 46 (2):160 – 166.
14. E. Jumate, D. Moldovan, D. Manea, D. Demco, R. Fechete. The Effects of Cellulose Ethers and Limestone Fillers in Portland Cement-Based Mortars by 1H NMR relaxometry. Applied Magnetic Resonance, 47(2016): 1353-1373.
15. Claudiu Aciu, Daniela Lucia Manea, Cosmin Striletchi, “The Eccomat Program for the Selection of Ecological Materials in Order to Ensure a Healthy Built Environment”, *Procedia Technology* 19(2015): 490–497.
16. Claudiu Aciu, Daniela Lucia Manea, Carmen Puia, Oana Cadar, “Mortars for the Enhancement of the Indoor Environmental Quality”, *STUDIA UBB CHEMIA*, LX, 4/2015:45 – 54, 2015.
17. Claudiu Aciu, Daniela Lucia Manea, Luminita Monica Molnar, Elena Jumate, “Recycling of Polystyrene Waste in the Composition of Ecological Mortars”, *Procedia Technology* 19(2015):498–505, DOI: 10.1016/j.protcy.2015.02.071.
18. Elena Jumate, Daniela Lucia Manea, Claudiu Aciu, Luminita Molnar, Radu Fechete, “Innovative Materials Made by Adding Cellulose Ethers to Cement Mortars”, *Procedia Technology* 19(2015): 291–298.
19. D.A. Iluţiu Varvara, L. Brânduşan, G. Arghir, E. Pică, “Researches about the characterization of metallurgical slags for landfilled wastes minimization”. Environmental Engineering and Management Journal, 14(2015):2115-2126.

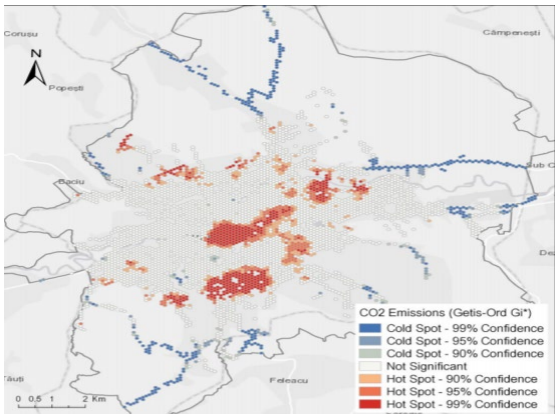
The offer addressed to the economic environment

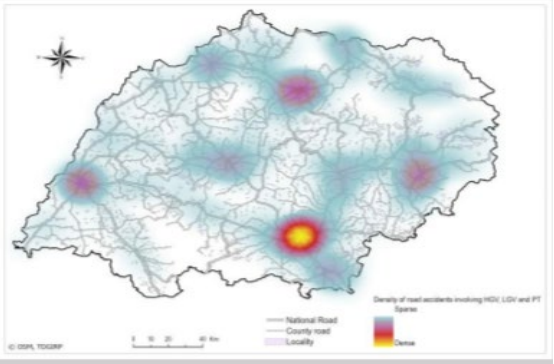
Research & development	**Research & development in core areas** Fundamental domain Civil Engineering – modern techniques and methods used in building materials quality control. **Research & development in applied fields** Green building materials. Recovery of industrial waste in construction materials. Influence of construction materials on health and environment. **Development strategy** The research and development activities of the research group are focused on: - contracts with third parties, research in the fields of building materials; - publishing articles in national and international journals indexed BDI and ISI; - participating in conferences, products presentations or technology development in the field of Civil Engineering.
Consulting	Quality control of building materials. Consultancy and applied research for the industrial or academic environment, according to the skills of the group members.
Applied engineering services	The Building Materials laboratory is part of the Central Laboratory of the Faculty of Civil Engineering and can issue quality certificates (test reports) for the authorized profiles. Tests on building materials (natural stone, aggregates, plaster, lime, cement, mortar, ceramic products, bitumen and bitumen impregnated materials etc.). Determination of the specific surface using Blaine permeameter. Determination of mechanical strengths of building materials (tensile, flexural and compressive strength) Observation of the behaviour of structures in real-time using non-destructive methods.
Training	Specialized courses in quality control of building materials. Training courses in the field of special rehabilitation materials.

TRANSPORT SYSTEMS RESEARCH GROUP

Contact details

Name	**Transport Systems Research Group**
Acronym	**TSRG**
Logo	GCDST
Site	https://iit.utcluj.ro https://erris.gov.ro/Transport-Systems-Research-Group
Address	72-74, Observatorului str., 400363 Cluj-Napoca, România
Faculty Department	**Faculty of Civil Engineering** **Railways, Roads and Bridges Department**
Telephone	+40 264 401969
Fax	+40 264 592072
Director	Ș.l. dr. ing. Rodica Dorina **CADAR**
e-mail	Rodica.CADAR@cfdp.utcluj.ro





Areas of expertise

Traffic Engineering and Transportation Planning:
Traffic operations and control, Intelligent Transport Systems (ITS)– monitoring activity with GPS and weight-in-motion systems.Transport impact on urban mobility – survey deployment and analysis, transport macroscopic modeling.
Economic, health and environmental impacts of transport systems; – congestion analysis, population safety and exposure, environmental impact assessment. Intermodal regional transport; Integrated transport and land-use planning – modal distribution analysis, modal shift policies, Congestion mitigation, Traffic safety under mixed traffic flow, Heterogeneous traffic-flow modeling and simulation, Activity-based travel demand modelling, Dynamic and stochastic modeling of transportation networks
Pavement Engineering
Pavement recycling, Road reliability , Circular economy - sustainable processing, reuse, recycling and recovery schemes Micro-mechanical characterization of asphalt concrete, Raw materials innovation, Investigation on modified binders Laboratory testing and field studies for road structures and materials, Fatigue and healing of asphalt mixtures, Performance based design of bituminous mixes, Concrete pavements, Road-infrastructure asset management

Team

Prof. Dr. Eng. Mihai Iliescu - PhD supervisor, Asoc.Prof. Dr. Eng. Gavril Hoda, Assist. Prof.Dr.Eng. Beca Ilinca Mirela; Assist. Prof.Dr.Eng. Boitor Melania**,** Assist. Prof. Dr. Eng. Cadar Rodica, Assist. Prof.Dr.Eng. Ciocan Remus, Assist. Prof. Dr. Eng. Andrei Florin Clitan, Assist. Prof.Dr.Eng. Danciu Alexandra, Assist. Prof. Dr. Eng. Mihai Liviu Dragomir; Assist. Prof.Dr.Eng. Toşa Cristian, Assist. Prof.Dr.Eng. Marusceac Vladimir, Technician/analys: eng. Jecan Daciana

Representative projects

"Study on establishing the number of public transport taxi licenses in the city of Cluj-Napoca for the period 2020-2025", contract with Cluj-Napoca Municipality 2019
"Traffic impact study for the urbanization area following the construction of County Emergency Clinical Hospital Sibiu" - Contract no. 40/ 2018, 2018-2019
"Design services of the new general urban plan and the local urban planning regulation of Apahida commune-traffic study", contract with industry, 2018
"Experimental and numerical study on the performance of asphaltic concrete from the perspective of the thermal susceptibility and the value of the modulus of elasticity" - CICDI2017, ID 18, internal project financed by TUCN, 2017-2018
"Study on light stains at runway surface with asphalt road" – CICDI2017, ID5, internal project financed by TUCN, 2017-2018
"Mobility study to support the introduction of local public transport system in Floresti commune, Cluj County"

- CONTRACT Nr. 20788/14.11.2012. Project study period: 3rd December 2012 - 28th February 2013
"Traffic study on rehabilitated county road" DJ 151 Km 45+810 – Km 126+712 between Mureş and Bistriţa Counties. Project study period: July 2013 - September 2013.
"Study of road asphaltic mixtures improved with bitumen additives", Contract 8/18.10.2013,for C.N.A.D.N.R. S.A
THE ISSUE – "**Traffic Health Environment Intelligent Solutions for Sustaining Urban Economies"**, Associated partner within the North West Development Region of Romania. Starting October 2012.

Significant results

The most representative publications of the past 5 years:

1. Boitor, R. M., Cadar, R. D., Măran, P. D., Mannini, L., & Petrelli, M. (2019). A NEW TOOL FOR THE EVALUATION OF CO2 EMISSIONS FROM ROAD TRAFFIC: A CASE STUDY IN CLUJ-NAPOCA, ROMANIA. Environmental Engineering & Management Journal (EEMJ), 18(9). Online at http://www.eemj.icpm.tuiasi.ro/issues/vol18/vol18no9.htm, Indexed in Web of Science
2. The Speed - Flow Relationship on Urban Roads in A Romanian Town, Dorina, Cadar Rodica ; Melania, Boitor Rozalia ; Mihai, Dragomir …More, 3RD WORLD MULTIDISCIPLINARY CIVIL ENGINEERING, ARCHITECTURE, URBAN PLANNING SYMPOSIUM (WMCAUS 2018), Volume 471 Published 2019
3. A ROAD TRAFFIC PREDICTION STUDY BASED ON WEIGH-IN-MOTION DATA, By: Ciont, Nicolae; Cadar, Rodica Dorina; Cimpean, Dalia Sabina, PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE Volume: 19 Issue: 4 Pages: 567-574 Published: OCT-DEC 2018
4. Effects of Traffic Volumes on Accidents: The Case of Romania's National RoADSm By: Cadar, Rodica Dorina; Boitor, Melania Rozalia; Dumitrescu, Mara, GEOGRAPHIA TECHNICA Volume: 12 Issue: 2 Pages: 20-29 Published: OCT 2017
5. Improving Traffic Conditions on a Set of Three Intersections Using Microscopic Simulation Models, Clitan, Andrei - Florin; Dragomir, Mihai-Liviu; Madalina, Ciotlaus; et al., Conference: 10th International Conference on Interdisciplinarity in Engineering (INTER-ENG) Location: Tirgu Mures, ROMANIA Date: OCT 06-07, 2016 INTER-ENG 2016 Book Series: Procedia Engineering Volume: 181 Pages: 139-145 Published: 2017
6. Urban Mobility and Road User Behavior Assessment, By: Cadar, Rodica Dorina; Boitor, Rozalia Melania; Petrelli, Marco, Conference: 10th International Conference on Interdisciplinarity in Engineering (INTER-ENG) Location: Tirgu Mures, ROMANIA Date: OCT 06-07, 2016, 10TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING, INTER-ENG 2016 Book Series: Procedia Engineering Volume: 181 Pages: 116-122 Published: 2017
7. Employing a Traffic Data Processing Software to Efficiently Design Road Pavements, By: Ciont, Nicolae; Iliescu, Mihai; Cadar, Rodica Dorina, Conference: 10th International Conference on Interdisciplinarity in Engineering (INTER-ENG) Location: Tirgu Mures, ROMANIA Date: OCT 06-07, 2016, 10TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING, INTER-ENG 2016 Book Series: Procedia Engineering Volume: 181 Pages: 868-875 Published: 2017
8. TRAVEL BEHAVIOR ASSESSMENT FOR IMPROVED URBAN MOBILITY, By: Cadar, R. D.; Boitor, R. M.; Petrelli, M., Conference: 16th International Multidisciplinary Scientific Geoconference (SGEM 2016) Location: Albena, BULGARIA Date: JUN 30-JUL 06, 2016, NANO, BIO AND GREEN - TECHNOLOGIES FOR A SUSTAINABLE FUTURE CONFERENCE PROCEEDINGS, SGEM 2016, VOL II Book Series: International Multidisciplinary Scientific GeoConference-SGEM Pages: 771-778 Published: 2016

Products and technologies:

1. **Road Traffic and Transport** measurements:
Weight in motion system hi-trac 90, hi-trac 100, Laser TruCAM (All-in-one Digital Video Camera/Laser Speed and Ranging Device), MCLocator system for fleet management and location (6GPS vehicle test), Portable Skid Resistance Tester Device, GPS Leica GS09 NetRover RTK, GPS Data Logger Performance Meter, Weather Center Tehnoline WS 550, Sound Level Meter DeltaOHM HD2010UC, Infrared and Contact Thermometer FLUKE 561, Video camera Sony XR160E, Digital Camera Canon EOS1100D, QuickMap 3D (QM3D) 5.0 from Laser Technology; Transportation planning and traffic modelling software (Transyt, Arcady, Picady, VISUM, VISSIM), Programming language MATLAB, Graphing and data analysis software OriginPro.
2. **Road materials/structures**-laboratory and field studies:
Marshall test, Unitronic Frame, Proctor, Asphalt and Cement concrete: recipes, preparation and laboratory tests; Lucas plate test, Zorn plate test, Benkelman test; Bitumen tests (ductility, ball and ring, penetration, RTFOT).

The offer addressed to the economic environment

Research & development	*Research on traffic* safety and solution development; Development of traffic models (road network and junctions); Development of original solutions regarding survey structure for transport mobility studies in urban and rural areas; Development of statistical analyses for collected traffic data; *Research on ecological road materials* using recycled material or different waste materials (bricks, old pavements, old concrete form demolition etc.); Development of new road materials or different pavement solutions;
Consulting	Technical assistance in projects; Consulting, design, research and assistance for infrastructural projects (roads, parking lots, bridges and railroads); Award of contracts in urban roads field. Valuation: investments, acquisitions, economic costs, financial reporting, sales. Public transport planning.
Training	Actual standards and legal framework in road construction; Rehabilitation projects and road rehabilitation methods; Traffic safety - Audit and Inspection Training.

BRIDGE ENGINEERING RESEARCH CENTER

Contact details

Name	**Bridge Engineering Research Center**
Acronym	**BRERC**
Logo	
Site	http://constructii.utcluj.ro/departamentul-cai-ferate-drumuri-si-poduri-cfdp.html
Address	72-74 Observatorului Street, Cluj-Napoca, Cluj, Romania
Faculty Department	**Faculty of Civil Engineering Railways, Roads and Bridges Department (CFDP)**
Telephone	+4 0264 401 838
Fax	
Director	Assoc. Prof. Dr. Eng. Stefan I. Gutiu
e-mail	Stefan.Gutiu@cfdp.utcluj.ro

Areas of expertise

Tests for bridges and rail superstructures
Composite bridges, Steel bridges design and rehabilitation
Nielsen and network arch bridges – design and optimization techniques,
Truss structures – structural optimization
Design of bridges and art works, structural health monitoring and technical expertise
Concrete and wood bridges – design and rehabilitation

Team

Assoc. Prof. Dr. Eng. Stefan I. Gutiu, Assist. Prof. Dr. Eng. Catalin Moga, Assist. Prof. Dr. Eng. Alexandra Danciu, Assist. Prof. Dr. Eng. Mircea Suciu, Assist. Prof. Dr. Eng. Vladimir Marusceac

Representative projects

„**Technological Study on Technical Expert Services, SF, PTDE, Technical Assistance from the Designer for Capital Repair "Bridge over Mures river with overpass over CF Deda-Tg.Mures line"**, contract with industry, 2016-2019, Director: Assist. Prof. Dr. Eng. Alexandra Danciu
„Study on Safety Assessment in Operation of Unfinished Construction Hotel S + GF + 10E in Com. Constanta", contract with industry, (2017-2018)
„Develop National Annex SR EN 1994-2:2006", Contract no. 307/27.11.2007, Director: Prof. dr. eng. Radu Băncilă, "Politehnica" University of Timisoara. Beneficiary Ministry of Development, Public Works and Housing MDLPL TECHNICAL –Direction
„Review manual inspection of bridges. Indicative A.1.6.2./T5", Contract No. 58 / 02.10.2002, Contract Director Prof.dr.ing. Viorel Gabriela, Bucharest Beneficiary CESTRIN

Significant results

Articles in ISI rated journals, in the past 5 years:

1. Şt. I. GUŢIU, C. MOGA, Alexandra DANCIU: *Considerations regarding roadway steel bridges connections using bolts and end plates,* The Eight International Conference "Bridges in Danube Basin" 25-27 September 2019, Vienna, Austria, ISBN: 978-3-9502387-2-3
2. Şt. I. GUŢIU, P. MOGA, C. MOGA Alexandra DANCIU: *The new arch bridge in the city of Sibiu, Romania*, The 9th International Conference "Bridges in Danube Basin" , 2016, published in "Procedia Engineering 156 (2016) " ELSEVIER, ISSN 1877-7058, DOI 10.1016/j.proeng.2016.08.259, p. 132-139, http://authors.elsevier.com/sd/article/S1877705816324456, WOS:000383246700019
3. P. MOGA, Şt. I. GUŢIU, F. ANGHEL, C. MOGA Alexandra DANCIU: *Footbridge over the Somes River in Cluj-Napoca, Romania*, The 9th International Conference "Bridges in Danube Basin" , 2016, published in "Procedia Engineering 156 (2016) " ELSEVIER, ISSN 1877-7058, DOI 10.1016/j.proeng.2016.08.259, p. 249-256, http://authors.elsevier.com/sd/article/S1877705816324651, WOS:000383246700034

4. Şt. I. GUŢIU, C. MOGA, Alexandra DANCIU, M. SUCIU: *Constructive solutions for medium span footbridges,* 16th International Multidisciplinary Scientific Geoconference (SGEM 2016), Nano, Bio and Green – Technologies for a Sustainable Future, 30 june-6 july, 2016, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-69-8, ISSN 1314-2704, DOI:10.5593/sgem2016B62, pp 517-524, WOS:000391650000063
5. Şt. I. GUŢIU, C. MOGA, Alexandra DANCIU: *Elastic and plastic design of composite steel-concrete girders with circular holes,* 16th International Multidisciplinary Scientific Geoconference (SGEM 2016), Nano, Bio and Green – Technologies for a Sustainable Future, 30 june-6 july, 2016, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-69-8, ISSN 1314-2704, DOI:10.5593/sgem2016B62, pp 549-556, WOS:000391650000072
6. C. MOGA, Şt. I. GUŢIU, Alexandra DANCIU, M. SUCIU: *Concrete shrinkage stresses and thermal effects in the composite girders according to Eurocodes,* 16th International Multidisciplinary Scientific Geoconference (SGEM 2016), Nano, Bio and Green – Technologies for a Sustainable Future, 30 june-6 july, 2016, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-69-8, ISSN 1314-2704, DOI:10.5593/sgem2016B62, pp 501-508, Accession Number: WOS: 000391650000066
7. Alexandra DANCIU, Şt. I. GUŢIU, C. MOGA: *Bi-dimensional analysis of a 90 m arch with different hanger arrangements,* 16th International Multidisciplinary Scientific Geoconference (SGEM 2016), Nano, Bio and Green – Technologies for a Sustainable Future, 30 june-6 july, 2016, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-69-8, ISSN 1314-2704, DOI:10.5593/sgem2016B62, pp 477-484, Accession Number: WOS: :000391650000063
8. Şt. I. GUŢIU, C. MOGA: *Bending Resistance of a Slender Plate Girder With Longitudinal Stiffener*, 4th International Conference on Civil Engineering, Architecture and Building Materials, CEABM 2014, 24-25 May, Haikou, China, Source: ADVANCES IN CIVIL AND INDUSTRIAL ENGINEERING IV, Book Series: Applied Mechanics and Materials, Volume: 580-583, Pages: 2332-2335, DOI: 10.4028/www.scientific.net/AMM.580-583.2332, Web of Science Categories: Engineering, Industrial; Engineering, Civil; Materials Science, Multidisciplinary; Mechanics Research Areas: Engineering; Materials Science; Mechanics, Published: 2014, Trans Tech Publications, Switzerland, IDS Number: BC0BQ, ISSN: 1660-9336, ISBN: 978-3-03835-165-8, Accession Number: WOS:000348897703057
9. Şt. I. GUŢIU, C. MOGA, Alexandra DANCIU: *Composite steel concrete trusses for railway bridge superstructures,*14th GeoConference on Nano, Bio and Green – Technologies for a Sustainable Future, SGEM 17-26 june, 2014, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-21-6, ISSN 1314-2704, DOI:10.5593/sgem2014B62, pp 73-80, Accession Number: WOS:000366135800010
10. C. MOGA, Şt. I. GUŢIU, Alexandra DANCIU: *Influence of cross-sectional shape on the values of the critical buckling force,*14th GeoConference on Nano, Bio and Green – Technologies for a Sustainable Future, SGEM 17-26 june, 2014, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-21-6, ISSN 1314-2704, DOI:10.5593/sgem2014B62, pp 219-226,
11. C. MOGA, Şt. I. GUŢIU, Alexandra DANCIU: *Shear stresses transfer at the steel-concrete interface in circular concrete filled steel tubes ,*14th GeoConference on Nano, Bio and Green – Technologies for a Sustainable Future, SGEM 17-26 june, 2014, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-21-6, ISSN 1314-2704, DOI:10.5593/sgem2014B62, pp613-620, Accession Number: WOS:000366135800079
12. Alexandra DANCIU, D. DANCIU, C. MOGA, Şt. I. GUŢIU: *Evolutionary method for re-triangulation,*14th GeoConference on Nano, Bio and Green – Technologies for a Sustainable Future, SGEM 17-26 june, 2014, Bulgaria, Conference Proceedings, Volume II, Green buildings technologies and materials; Green design and sustainable architecture, ISBN 978-619-7105-21-6, ISSN 1314-2704, DOI:10.5593/sgem2014B62, pp 145-152,

The offer addressed to the economic environment

Research & development	**Research & development in core areas**: Fundamental domain Civil Engineering – design, technical expertise and rehabilitation of composite, steel, concrete and timber bridges. **Research & development in applied fields**: - Design of steel members; - Study of the behaviour of corrugated webs; - Development of glulam elements; - Optimisation of network arch bridges; - Design of steel joint. **Development strategy:** National and International research contracts, contracts with third party, article publishing in Journals (WOS, SCOPUS with impact factor), National and International conference participations, workshops, products presentation or technology development in the field of Bridge Engineering;
Consulting	Design, technical expertise and erecting of bridges. Applied research for the industrial or academic environment, according to the skills of the group members.
Training	Training courses in the field of modern software for computer aided design (CAD). Training courses in the use of software for numerical simulations such as: Midas, Prokon, Sofistik, CSI Bridge.

Research, Technological Development and Innovation Centre in Civil and Building Services Engineering

Contact details

Name	**Centru de Cercetare, Dezvoltare Tehnologică și Inovare în Inginerie Civila și Instalații**
Acronym	**RTDI – Civ&BsE**
Logo	
Site	
Address	25, G. Baritiu Street 400027 Cluj-Napoca, România
Faculty Department	Faculty of Civil Engineering Department of Civil Engineering and Management
Telephone	+40264401355; +40264401250
Fax	+40264401355; +40264401250
Director	Prof.Univ.Dr.Eng. Ioan AȘCHILEAN
e-mail	ioan.aschilean@ccm.utcluj.ro

Areas of expertise

1. Energy management of buildings and associated technologies: energy demands and consumption in existing and future buildings; energy balances in building complexes (residential, commercial, industrial, public and other buildings); energy conservation in built environment; energy sustainability, resilience and climate adaptability of buildings; external and internal design conditions for energy efficient buildings; life cycle energy efficiency of buildings and embodied energy; residential energy refurbishment; and renovation; building envelope materials; new building materials; engineered structures for buildings; sustainable building management strategies; clean technologies associated with energy efficient buildings; specific sustainable technologies for the building construction industry.

2. Sustainable development of localities infrastructure: adaptive built environments for sustainable cities; public health interventions in the built world; water infrastructure; power and energy infrastructure; transport infrastructure; engineered structures: bridges, railways, roads and other transport infrastructures; emerging technologies in urban sustainability and construction; information technology infrastructure; resilient infrastructure; rural infrastructure; urban infrastructure; remanufacturing, reuse and recycling; waste management infrastructure; intelligent systems and technologies.

3. Renewable energy management and associated technologies: biomass conversion; energy bioresources; geothermal technology; HydroPower; hydrogen production technology and fuel cells; nuclear energy; nutrient-energy-water nexus; photovoltaic technology applications; solar and low energy architecture; solar radiation management; solar thermal applications; thorium energy; wave, tide and ocean energies; wind energy technology; circular economy of urban development under the current climate changes; socio-economic and policy issues; clean technologies associated with renewable energy - optimization techniques, Life Cycle Assessment (LCA), Life Cycle Inventory (LCI), Life Cycle Impact Assessment (LCIA), Life Cycle Costing (LCC).

Team

Director: prof.univ.dr.eng. Ioan AȘCHILEAN Consultant: prof.univ.em.dr.eng. Gheorghe BADEA

1. Energy management of buildings and associated technologies	2. Sustainable development of localities infrastructure	3. Renewable energy management and associated technologies
Responsible:	**Responsible:**	**Responsible:**
assist.prof.dr.eng. Dorina SUCALA assist.prof.dr.eng. Andrei BOLBOACĂ	assoc.prof.dr.eng. Ovidiu GAVRIȘ assist.prof.dr.eng. Mihaela DUMITRAN	prof.dr.eng. Ioan AȘCHILEAN assist.prof.dr.eng. Horea DAN
Members:	**Members:**	**Members:**
- assoc.prof.dr.ec. Sorina A. CIPLEA - drd.eng. Ionuț IANCU - drd.arh. Radu Ioan BOIERU - drd.eng. Alex O. MUNTEAN - drd.eng. Vicențiu C. RENDEȘ - drd.eng. Paul Adrian BUDUȘAN	- assist.prof.dr.eng. Adrian BOJAN - drd.eng. Vlad Răzvan AȘCHILEAN - drd.eng. Cristian COSTIN - drd.eng. Marius DUMITRESCU - drd.eng. Flavius PLEȘA - drd.eng. Lucian POPESCU	- drd.eng. Veronica GAGEA - drd.eng. Alexandru GAGEA - drd.eng. Alexandru BĂDIȚĂ - drd.eng. Paul MATEI - drd.eng. Monica MATEESCU - drd.eng. Ovidiu MATEESCU

Representative projects

"Optimized system for producing thermal energy from renewable sources using heat pump", Main Partner: National Research-Development Institute for Cryogenic and Isotopic Technologies - INC DTCI ICSI Rm.Valcea Project partner: Technical University of Cluj-Napoca. Partnerships in priority areas Domain: 2-Energy Project acronym: OPTHP Contract no: 22-128 / 2008 Contract period: 2008-2011.

"Design and realization of the combustion pile assembly. Experimental determinations in order to establish functional performance. Elaboration of technical documentation to achieve a combination of hydrogen and airpowered combustion cells with a useful electrical power of up to 1kW", collaboration with - INC DTCI ICSI Rm.Valcea, 2008-2010.

"Unfavorable impact of street traffic on water, sewerage and gas pipelines solutions and ways to solve", Technical University of Cluj-Napoca & AIB CONSULTING SRL.

"Research and development of a membrane Reactor for the production of pure hydrogen usable in supplying fuel cells", collaboration with - INC DTCI ICSI Rm.Valcea, 2010.

Significant results

The most representative publications of the past 5 years:

1. Aşchilean, I., Cobîrzan, N., Bolboaca, A., Boieru, R., & Felseghi, R. A. (2021). Pairing solar power to sustainable energy storage solutions within a residential building: A case study. *International Journal of Energy Research*, *45*(10), 15495-15511.
2. Felseghi, R. A., Aşchilean, I., Cobîrzan, N., Bolboacă, A. M., & Raboaca, M. S. (2021). Optimal Synergy between Photovoltaic Panels and Hydrogen Fuel Cells for Green Power Supply of a Green Building—A Case Study. *Sustainability*, *13*(11), 6304.
3. Ancaș, A. D., Aşchilean, I., Profire, M., Țurcanu, F. E., & Felseghi, R. A. (2021). Experimental Study on the Behaviour of Seismic Actions on a Flexible Glass-Reinforced Plastic Structure Used in Water Transport Pipes. *Materials*, *14*(11), 2878.
4. Filote, C., Felseghi, R. A., Raboaca, M. S., & Aşchilean, I. (2020). Environmental impact assessment of green energy systems for power supply of electric vehicle charging station. *International Journal of Energy Research*, *44*(13), 10471-10494.
5. Maier, D., Maier, A., Aşchilean, I., Anastasiu, L., & Gavriș, O. (2020). The relationship between innovation and sustainability: A bibliometric review of the literature. *Sustainability*, *12*(10), 4083.
6. Ancaş, A. D., Aşchilean, I., Profire, M., & Toma, I. (2019). System for Increasing the Seismic Safety of Pipelines in the Water Supply and Distribution Networks. *Water*, *11*(5), 1049.
7. Badea, G., Felseghi, R. A., Varlam, M., Filote, C., Culcer, M., Iliescu, M., & Răboacă, M. S. (2019). Design and simulation of romanian solar energy charging station for electric vehicles. *Energies*, *12*(1), 74.
8. Aşchilean, I., & Giurca, I. (2018). Choosing a water distribution pipe rehabilitation solution using the analytical network process method. *Water*, *10*(4), 484.
9. Aşchilean, I., Iliescu, M., Ciont, N., & Giurca, I. (2018). The unfavourable impact of street traffic on water distribution pipelines. *Water*, *10*(8), 1086.
10. Aşchilean, I., et al. (2018). Design and concept of an energy system based on renewable sources for greenhouse sustainable agriculture. *Energies*, 11.5: 1201.

Significant solutions:

Calculation relations for the flows and pressure drops related to the rehabilitated and modernized pipes; technical and economic strategies for choosing the optimal method for rehabilitating or modernizing water supply systems; method for determining when to rehabilitate or upgrade of a water network (Aschilean method).

Simultaneous and interdisciplinary approach of the two concepts with a special role in streamlining and decarbonizing energy generation systems for residential consumers: hydrogen technology and passive house. Evaluation of the local potential for RES harnessing through on-site electrolytic production of hydrogen in order to power a residential building.

Patents:

Badea G., Moldovan E.M. Three-stage natural gas filtration assembly, no. RO 126840/28.03.2014.
Badea G., Aşchilean I. Active system for functional isolation of fluid storage tanks, no. 126490 / 30.08.2013.
Badea G., Aşchilean I. Active system for protection of pipes related to fluid storage tanks, no. 12666 / 30.12.2013.

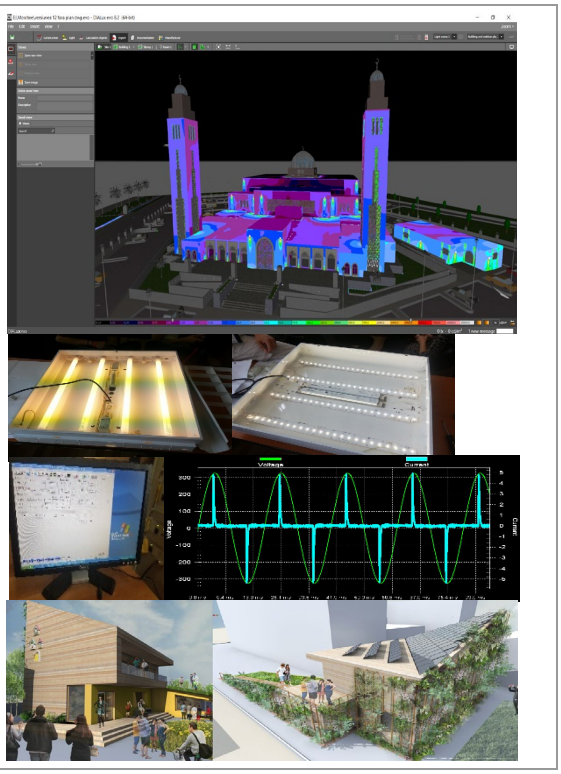
The offer addressed to the economic environment

Research & development	Pragmatic anchoring of research, technological development and innovation activities within the research center to the process of generating knowledge through the contribution of applied research to the innovative solution of practical problems. Supporting local enterprises in the Civil Engineering and Installations sector to be more competitive on the market by using applied research. Achieving the transfer of knowledge and technologies developed in the field of Civil Engineering and Installations for their implementation in Romanian enterprises. **Development strategy.** The research and development activities of the research centre are focused on: - identification and valorization of the research infrastructure by expanding the collaborations between the research teams at UTCN level, expanding the collaborations between the research team and other institutions, national research centers (INCDTIM Cluj-Napoca; ICSI Rm. Vâlcea; ICIA Cluj-Napoca, etc.); - assuming an active role of the research center in relation to the economic sector by extending and applying the RDI results within projects developed by economic organizations; - concentration of teaching and research skills in order to increase synergy and achieve the critical mass of researchers in order to improve the success rate of research project proposals in national/international competitions; - assisting and providing institutional support for participation in research projects, with addressability for young teachers (assistants), PhD students and / or master students; - assisting, supporting and providing institutional support for participation in projects financed by structural funds; - increasing the national and international visibility of the Faculty of Civil Engineering; - increasing the number of scientific publications in prestigious international journals -ISI Web of Science with IF; - increasing the number of publications (articles / books) in collaboration with foreign authors; - increasing participation in scientific events, conferences in the country and / or abroad; - involvement in organizing events and scientific initiatives with international participation.
Consulting	- design activities; technical expertise activities; specific project verification activities; management activities of investments; technical assistance of investments.
Training	- continuous training activities for specialists (project verifiers and technical experts); continuous professional training courses; short courses for profile engineers with topics of current interest.

LIGHTING – ELECTRICAL - LABORATORY

Contact details

Name	**Lighting - Electrical - Laboratory**
Acronym	**LEL**
Logo	L ighting E lectrical L aboratory
Site	http://users.utcluj.ro/~lec
Address	128-130 B-dul 21 Decembrie 1989, Cluj-Napoca, Romania
Faculty Department	**Faculty of Building Services Engineering** **Building Services Department**
Telephone	+40 723 661 536
Fax	+40 264 202 509
Director	Dr.eng. Dorin BEU, Assoc. Professor
e-mail	Dorin.beu@insta.utcluj.ro



Areas of expertise

Electric Lighting: 3D building simulations for the illumination levels using DIALux EVO 8.2; lighting measurements; energy efficiency lighting solutions;
Daylight: software building simulations for the daylight levels; lighting measurements; passive tubular daylight guidance systems;
Lighting Surveys: on the use of T8, T5, CFLs, LEDs;
Power quality: Power quality measurements for different end use devices, including LED luminaires;
Circular economy and regenerative Building: Studying the specific aspects related with green / active building services; carbon footprint reduction;
Renewable energies: hybrid lighting systems using photovoltaics; electrical design and testing of photovoltaic systems;

Team

Dr. Eng. Dorin BEU, Reader at the Technical University of Cluj-Napoca. FormerPresident of Romanian Green Building Council RoGBC (www.rogbc.org) and of Romanian National Lighting Committee (www.cnri.ro).Chief Editor together with prof. Kim from Seoul Kyun Hee University of International Journal of Sustainable Lighting (www.lightingjournal.org); Prof. Dr. Eng. Mircea BUZDUGAN, Lecturer. Dr. Eng. Calin CIUGUDEANU, PhD student Eng. Angel CAMPIANU; dr.eng. Horatiu ALB

Representative projects

"CoME EAsy" 2018-2021 H2020 project for synchronizing EEA and Covenant of Mayor https://www.european-energy-award.org/eu-project-come-easy, finding the best KPIs for city energy and climate management and conversion tables for one system tyo another;
EXCITE! Implementarea sistemului de management European Energy Award in Bulgaria, Macedonia de Nord si Slovenia. Proiect International H2020 Contract nr. 892034 2020-2023. http://www.excite-project.eu/
COST RESTORE 2017-2021 CA 16114 www.eurestore.eu, in charge with Training School finding solutions for regenerative buildings – concept, design, tender, maintenance;
"Ensuring LEC maintenance by detecting defects with the method of real-time reflectometry", Contract 171CI/2018, Cod PN-III-P2-2.1-CI-2018-1004, 2018;
"**Procedures for testing the protection systems equipped with digital relays, when commissioning substations in the national energetic system"** cod PN-III-P2-2.1- CI-2017-0799, NR. 147CI/2017;
"LoNNE" 2012-2016-member COST action ES 1204 – LoNNE Loss of Night Network (Manager of National Committee) http://www.cost-lonne.eu/ study of the impact of Artificial Light At Night on humans and on environment;
"Energy - Efficient Technologies for a Green University" in the program „Strategic research themes for young teams, Technical University of Cluj-Napoca,UTC-N", 2014-2015;
„Modernization and the Extension of Public Lighting System and the Modernization of the Lighting Sistem in two buildings of the City Hall" DALI and FPP, Contract nr. 380333/14.11.2013, UTC-N – City of Cluj-Napoca, cooperation program Switzerland-Romania;

"CREFEN" Project Ceex 2005 - 2008 - PC-D05-PT00-303: "Informatic Integrated System for Energy Efficiency and Saving in Residential Sector - CREFEN";
"ENERLIN - Lighting Energy Efficiency Initiative" contract EISAV/EIE/05/176/2005, : http://www.enerlin.enea.it, 2006-2008;

Significant results

1. Tavella, C; Spoerndli, C., Beu, D, Ceclan, A. CoME EASY—**Synchronizing European Energy Award with Other Initiatives. Case Study: Romanian Local Communities**, Energies 2021, 14(19), 6248; https://doi.org/10.3390/en14196248, Published 2021
2. Ciugudeanu, C., Buzdugan, M., Beu, D., Campianu, A., Galatanu, CD, **Sustainable Lighting-Retrofit Versus Dedicated Luminaires-Light Versus Power Quality,** Sustainability, 11(24), 7125, DOI 10.3390/su11247125, Published: 2019
3. Ivan, L, Beu, D., van Hoof, J, **Smart and Age-Friendly Cities in Romania: An Overview of Public Policy and Practice**, 17(14), 5202, DOI10.3390/ijerph17145202, INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH Published: 2020
4. Ciugudeanu C, Buzdugan M, Beu D. Campianu A, Galatanu C, ***Sustainable Lighting-Retrofit Versus Dedicated Luminaires-Light Versus Power Quality,*** Sustainabiliy, 2019, 11(24), 125; https://doi.org/10.3390/su11247125
5. Galatanu, CD ; Ashraf, M ; Lucache, DD; Beu, D, Ciugudeanu, C. ***Optical Utilization Factor For Architectural Lighting,*** LIGHT & ENGINEERING. Volume: 27 Issue: 6, Pages: 49-57 DOI: 10.33383/2017-101Published: 2019
6. Beu, D; Ciugudeanu, C; Buzdugan, M. ***Circular Economy Aspects Regarding LED Lighting Retrofit-from Case Studies to Vision***, SUSTAINABILITY Volume: 10 Issue: 10 Article Number: 3674 DOI: 10.3390/su10103674, Published: OCT 2018;
7. Galatanu, C.D; Gherasim, I; Beu, D; Lucache, D.D; ***Luminance field of the facades: from aggressive to attractive lighting***, 2018 IEEE INTERNATIONAL CONFERENCE ON ENVIRONMENT AND ELECTRICAL ENGINEERING AND 2018 IEEE INDUSTRIAL AND COMMERCIAL POWER SYSTEMS EUROPE (EEEIC / I&CPS EUROPE Book Group Author(s):IEEE Published: 2018;
8. Ciugudeanu, C; Beu, D; Rastei, E; ***Living Building Laboratory - Educational Building Project in Cluj-Napoca,*** EENVIRO-YRC 2015 – BUCHAREST, Edited by: Damian, RM Book Series: Energy Procedia Volume: 85 Pages: 125-131 DOI: 10.1016/j.egypro.2015.12.282 Published: 2016;
9. Ciugudeanu, C; Beu, D; ***Passive Tubular Daylight Guidance System Survey***, 9TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING, INTER-ENG 2015, Edited by: Moldovan, L Book Series: Procedia Technology Volume: 22 Pages: 690-696 DOI: 10.1016/j.protcy.2016.01.144 Published: 2016
10. Beu, D; Ciugudeanu, C; Maierean, M; Galatanu, C.D; ***Introducing a New Profession: Lighting Specialist***, ECOLOGY, ECONOMICS, EDUCATION AND LEGISLATION CONFERENCE PROCEEDINGS, SGEM 2016, VOL III, Book Group Author(s):SGEM Book Series: International Multidisciplinary Scientific GeoConference-SGEM Pages: 863-869 Published: 2016;
11. Beu, D; Ciugudeanu, C; Gyulai, R; ***Light Guiding Optical Lamellae System Simulations***, The 16th International Multidisciplinary Scientific Geoconference (SGEM 2016) Location: Albena, BULGARIA Date: JUN 30-JUL 06, 2016;
12. Balan, H; Tirnovan, R; Buzdugan, M; ***Commutation technique in the supply of electromagnetic actuators***, IET POWER ELECTRONICS Volume: 7 Issue: 1 Pages: 132-140 Published: JAN 2014;
13. Horia, B; Augustin, P.A; Mircea, B; Ioan, B; ***Analysis of multilevel converters operation through programmable source emulators***, The 49th International Universities Power Engineering Conference (UPEC), Published: 2014;

Significant solutions:
Hybrid Passive Tubular Daylight Guidance System;
Living Building Laboratory - build design for the first Romanian active building (a building that produce more energy than its own consumption), using traditional materials combined with the latest technologies;
Switzerland financial support approval (1.8 million euro) for the Final Project Proposal - Modernization and the Extension of Public Lighting System of the Cluj-Napoca City Hall;

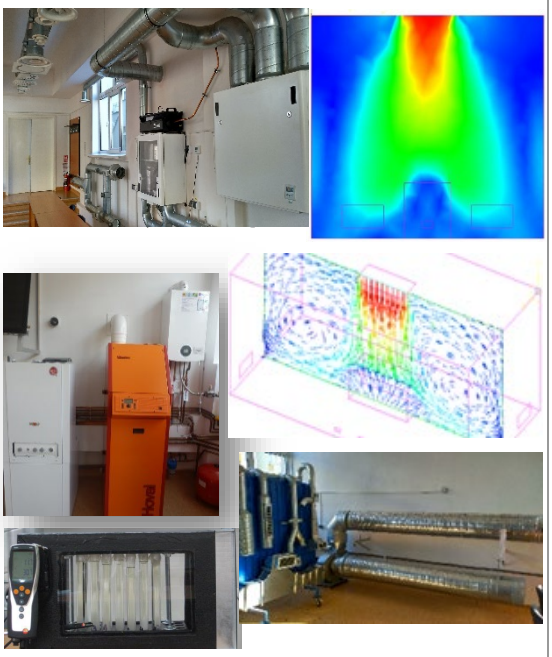
The offer addressed to the economic environment

Research & development	Supporting local lighting businesses to be more competitively on the market by using applied research; Providing and evaluating the best available techniques on the market; Evaluating and testing different new luminaires and their power quality behaviour;
Consultancy	Consulting, design, research and prototyping towards the development of different energy efficiency lighting techniques.
Design	Preparing lighting/electrical documentations for all the design phases: feasibility studies, final project proposals, technical projects, specifications and As-built;
Measurements	Lighting measurements with spectrophotometer; power quality measurements; electro-magnetic field measurements; thermo-visual surveys; earthing installation and earth resistivity; photovoltaics efficiency under different climatic conditions.
Training	Courses for Lighting Specialist. Energy efficiency lighting techniques, electrical design; lighting and power quality measurements.

SYSTEMS FOR PROVIDING INDOOR COMFORT IN ENERGY EFFICIENT BUILDINGS RESEARCH GROUP

Contact details

Name	**Systems for Providing Indoor Comfort in Energy Efficient Buildings Research Group**
Acronym	**SICEEB**
Logo	
Site	
Address	B-dul 21 Decembrie 1989, nr. 128-130, Cluj-Napoca, România
Faculty Department	**Faculty of Building Services** **Department of Building Services Engineering**
Telephone	+40 264 202502
Fax	+40 264 410179
Director	Assoc. Prof. Dr. Eng. Florin DOMNIŢA
e-mail	florin.domnita@insta.utcluj.ro



Areas of expertise

Heating ventilation and air conditioning (HVAC): Thermal analysis on heating and cooling units**;** Air distribution in ventilation systems; Systems for providing indoor air quality; HVAC systems for passive houses and near zero energy buildings (nZEB).
Indoor air quality (IAQ): air cleanness; chemical composition of indoor air; indoor air movement.
Thermal comfort: indoor air parameters; outdoor-indoor heat exchange, finite element thermal analysis.
Energy efficient systems: - air to air heat recovery; ground to air and water to air heat exchangers; heat pumps.
Renewable energies: Photovoltaic (PV) panels with crystalline and amorphous layers; Vacuum tube and thermal solar collector; geothermal energy sources; wind turbines.

Thermal storage: Latent heat thermal energy storage; phase change materials; cold storage for free cooling; thermal storage in hot and cold water tanks.

Team

Assoc.Prof.Dr.Eng. Florin DOMNIŢA, Assoc.Prof.Dr.Eng. Gheorghe Viorel DRAGOŞ, Assoc.Prof.Dr.Eng. Carmen MÂRZA, Assoc.Prof.Dr.Eng. Ciprian BACOŢIU, Assoc.Prof.Dr.Eng. Ancuţa ABRUDAN, Assoc.Prof.Dr.Eng. Eugen VITAN, Assoc.Prof.Dr.Eng. Ioan POP, Lect.Dr.Eng. Gelu CHISĂLIŢĂ, Lect.Dr.Eng. Anca HOŢUPAN, Lect.Dr.Eng. Teodor CHIRA, Lect.Dr.Eng. Raluca MOLDOVAN, Lect.Dr.Eng. Georgiana CORSIUC, Lect.Dr.Eng. Tania RUS, Lect.Dr.Eng. Roxana MARE, Asist.Dr.Eng. Octavian POP, Asist.Dr.Eng.Constantin CILIBIU Asist.Dr.Eng.Horaţiu ALBU

Representative projects

Energy efficiency of air cooling systems by using phase changer materials, CICDI 2017, nr.2013/12.07.2017;
Meeting of Energy Professional Skills (MEnS) - Energy analysis techniques and practices for implementing near zero energy buildings (nZEB), Project HORIZON 2020-EE-2014-2015, nr. 649773/30.03.2015; 2015-2017;
Energy Efficient Technologies for a Green University; CICDI 2014, nr. 29223/05.12.2014, 2014-2015;
Energy efficiency of ventilation systems, nr. 6079/04.03.2011; Program nr. 15-SK-RO-0010-10, code 3.5; 2011-2012;
The thermal rehabilitation of 25 kindergartens in Arad and Timiş Counties, nr. S/PRET/17/2011, 2011-2012;
Optimized system for the production of thermal energy from renewable energy sources using heat pumps, PNCDI2 OPTHP 22-128, 2010.

Significant results

The most representative publications of the past 5 years:

1. Kapalo Peter, Vojtasko Lubos, Vasilisin Daniel, Domnita Florin, Bacotiu Ciprian, Kandrac Robert, Batorova Michaela. Investigation of the influence of the level of physical activity on the air exchange requirements for a gym. Building And Environment. Volume 204. DOI 10.1016/j.buildenv.2021.108123. 2021**. IF 6.456**/2020.
2. Rus Tania, Nemeti Georgiana, Domnita Florin, Goidescu Iulian, Muresan Daniel. Indoor thermal environment evaluation of postpartum patients in a tertiary level maternity in Romania during summer. Science and Technology

for the Built Environment. Volume 27. Issue7. pp. 948-959. DOI 10.1080/23744731.2021.1906084. 2021. **IF 1.99**/2020.
3. Kapalo Peter, Vilcekova Silvia, Meciarova L'udmila, Domnita Florin, Adamski Mariusz. Influence of Indoor Climate on Employees in Office Buildings-A Case Study. Sustainability. Volume 12. Issue 14. DOI 10.3390/su12145569. 2020. **IF 3.251**/2020.
4. Kapalo, P., Domnita, F., Pop, O., Adamski, M., Voznyak, O. Considerations about the Required Volumetric Air Flow Rate inside an Office Room with one Occupant - Case Study. Journal Of Applied Engineering Sciences. Volume 10. Issue 1. pp 31-38. DOI 10.2478/jaes-2020-0006. 2020.
5. Peter Kapalo, Ludmila Meciarova, Silvia Vilcekova, Eva Kridova Burdova, Florin Domnita; Ciprian Bacotiu; Kinga-Eva Peterfi, Investigation of CO2 production depending on physical activity of students. International Journal of Environmental Health Research, Volume 29, Issue 1, 2019, WOS:000457284700003, pp. 31-44, ISSN: 0960-3123, IF 1.465/2018.
6. Ancuţa Abrudan, Octavian Pop, Alexandru Serban, Mugur Bălan, New perspective on performances and limits of solar fresh air cooling in different climatic conditions. Energies, 2019, 12/11, 2113; ISSN1996-1073, IF 2,67/2018.Florin Domniţa, Peter Kapalo; Inlet device with double exponential profile distributor for indoor air dispensation. Selected Scientific Papers – Journal of Civil Engineering, Volume 14, Issue 1, 2019, pag. 103-112, ISSN 1336-9024, DOI: 10.1515/sspjce-2019-0011.
7. Roxana Mare, Adriana Hadarean, Tania Rus, Dana Ilutiu-Varvara, Teodor Chira, Modelling of an Improved Hybrid Cooler Used in Sustainable Buildings, IOP Conf. Series: Materials Science and Engineering, 471, 2019, 022032, doi:10.1088/1757-899X/471/2/022032.
8. Octavian Pop, Lucian Tutunaru, Florin Bode, Ancuţa Abrudan, Mugur Bălan, Energy efficiency of PCM integrated in fresh air cooling systems in different climatic conditions. Applied Energy, vol 212, pag.976-996, 2018, DOI: 10.1016/j.apenergy.2017.12.122 ISSN 0306-2619, IF 8.426/2018.
9. Ancuţa Abrudan, Tania Rus, Roxana Mare, Thermal rehabilitation influence upon the comfort in hospitals, 5th International Conference on Advancements of Medicine and Health Care through Technology (MEDITECH), October 2016, Cluj-Napoca, IFMBE Proceedings, Volume: 59, pag.155-158 DOI: 10.1007/978-3-319-52875-5_35.
10. Peter Kapalo; Florin Domnita; Ciprian Bacotiu; Martin Podolak, The influence of occupants' body mass on carbon dioxide mass flow rate inside a university classroom - case study. International Journal of Environmental Health Research, Volume 28, Issue 4, 2018, WOS:000439887900007, pp. 432-447, ISSN: 0960-3123, IF 1.465/2018.
11. Tania Rus, Lucian Rus, Dana Iluţiu-Varvara, Roxana Mare, Ancuţa Abrudan, Florin Domniţa, Experimental Investigation on the Influence of Overlap Ratio on Savonius Turbines Performance. International Journal of Renewable Energy Research, Volume 8, Issue 3, 2018, WOS:000444037500037, pp. 1791-1799, ISSN 1309-0127.
12. Peter Kapalo; Florin Domnita; Ciprian Bacotiu; Nadija Spodyniuk, The impact of carbon dioxide concentration on the human health - case study. Journal of Applied Engineering Sciences, Volume 8, Issue 1, 2018, WOS:000442423900008, pp. 61-66, ISSN: 2284-7197.
13. Mârza C., Corsiuc G, Molvovan R., Dragos V., The concept of autonomous building in the context of sustainable development, Bulletin of The Transilvania University of Brasov, VOL. 11 (60) Special Issue No.1 – 2018, Series I: Engineering Sciences, Proceeding of the International Scientific Conference „CIBV 2018", 2018, Brasov, pp. 349-356, ISSN 2065-2127.
14. Pop O.G., Iuga C.A., Tutunaru L.F., Balan M.C., Modeling and experimental validation of the thermal behaviour of PCM using DSC input data, AIP Conference 2018, International Conference on Energy Engineering and Smart Materials 2018, Milano.
15. Domnita, F., Moldovan, R.P., Kapalo, P., Rus, T., Ilutiu-Varvara, D.A., Energy efficiency evaluation of a controlled ventilation system with Canadian well for low energy houses - Case study, 17th International Multidisciplinary Scientific Geoconference, SGEM 2017, Albena, Bulgaria, 2017, ISBN 978-619-7105-15-5, pp 231-238.

Significant solutions:
Indoor CO2 concentration measurements depending on activities, methods for determining fresh air supply, mathematical model for fresh air flow rate-based on statistics, energy evaluation of ground air heat exchanger, thermal rehabilitation of buildings, mathematical model for latent heat thermal energy storage, accurate modelling of thermo-physical properties of PCM, optimisation of heat pumps with renewable energy sources, mathematical model for hybrid coolers, methodology for evaluation of led luminaires.

Products and technologies:
1. Double-Equal Strength Diffuser for air distribution
2. Efficient hybrid cooler; 3. Energy audit of buildings, 4. Savonius Turbines, 5. Algorithm for selecting phase change materials based on climatic conditions, 6. Adiabatic chamber for thermal analysis of LED luminaires, 7. Software for evaluating heat gains through opaque building elements in transient sinusoidal regime

The offer addressed to the economic environment

Research & development	**Research & development in core areas:** Fundamental domain Building Services Engineering – technologies for assuring comfort and IAQ. **Research & development in applied fields:** nZEB, thermal energy recovery coupled with renewable sources, Influence of CO_2 concentrations on health and environment, thermal storage. **Development strategy:** National/International research contracts, contracts with third party, article publishing in Journals (WOS, SCOPUS), National/International conference participations, products presentations or technology development in the field of Building Services Engineering.
Consulting	Design, energy audit, consulting, research, product testing, HVAC systems airflow balancing, sound comfort analysis, thermal infrared analysis, evaluation of thermal comfort parameters.
Training	HVAC systems in nZEB, Courses for energy audit, Courses focused on IAQ and renewable energies.

ENVIRONMENTAL QUALITY ANALYSIS AND BUILDING SERVICES MATERIALS RESEARCH GROUP

Contact details

Name	**Environmental Quality Analysis and Building Services Materials Research Group**
Acronym	**EBSRG**
Logo	EBSRG Technical University of Cluj - Napoca Faculty of Building Services
Site	http://instalatii.utcluj.ro/centre-de-cercetare.html
Address	128-130 21 December 1989 Blv., 400604, Cluj Napoca, Romania
Faculty Department	Faculty of Building Services Engineering Department of Building Services Engineering
Telephone	+40264202552
Fax	-
Director	**Assoc. Prof. Dr. Eng. Dana - Adriana ILUŢIU - VARVARA**
e-mail	Dana.Adriana.Varvara@insta.utcluj.ro

Areas of expertise

Environmental factors pollution control; Environmental parameters monitoring; Environmental quality; Indoor air quality (IAQ); Outdoor air quality (OAQ); Quality of industrial microclimate; Prediction of the environmental quality factors; Industrial wastes; Hazardous wastes; Wastes recycling; Sustainable development; New materials with special properties; Advanced materials; Materials for building services engineering; Materials chemistry; Applied chemistry; Environmental chemistry.

Team

Assoc. Prof. Dr. Eng. Dana - Adriana ILUŢIU - VARVARA, Assoc. Prof. Dr. Eng. Carmen Maria MÂRZA, Prof. Dr. Eng. Daniela Lucia MANEA, Assoc. Prof. Claudiu ACIU, Lecturer Dr. Eng. Adriana HĂDĂREAN, Lecturer Dr. Marius FETEA, Lecturer Dr. Ioan GIURCA, Lecturer Dr. Anca HOŢUPAN, Lecturer Dr. Teodor Valeriu CHIRA, Lecturer Dr. Eng. Raluca - Paula MOLDOVAN, Lecturer Dr. Anagabriela DEAC, Lecturer Dr. Cristina IACOB, Lecturer Dr. Daniel RUSU, Lecturer Dr. Eng. Georgiana - Dorina CORSIUC, Lecturer Dr. Eng. Roxana MARE, Lecturer Dr. Eng. Tania RUS, Lecturer Dr. Ioana – Monica SAS – BOCA, Lecturer Dr. Marius TINTELECAN, Assist. Prof. Dr. Constantin CILIBIU.

Representative projects

"Studies and researches regarding the reduction of **the negative environmental impact** of the pollutants **and solid wastes from the steelmaking",** "Development and support of multidisciplinary postdoctoral programs in major technical areas of national strategy of Research - Development - Innovation" **4D-POSTDOC**, contract no. POSDRU/89/1.5/S/52603, project co-funded by the European Social Fund through Sectoral Operational Program Human Resources Development 2007-2013, http://193.226.17.4:8080/sites/fordoc/default.aspx (2010-2013).
"Creation of a cooling solar thermoelectric installation (ITERMSOR)", Internal competition for Research/ Development/ Innovation – Project 16671/12.07.2017, type 1.2 – CI2017_INST_1 (33/2017), Technical University of Cluj-Napoca (2017-2018).
"Research concerning the **characterization of the oily mill scale in order** to identify a optimum method **for reduction of the quantities of hazardous wastes landfilled**", Internal competition for Research/ Development/ Innovation –Project 16362/07.07.2016, C.I. type 1.1 - T4, Technical University of Cluj-Napoca (2016-2017).
"Studies of methods to optimize the use of sludge in the building materials industry", Internal competition for Research/ Development/ Innovation. Project C.I. type 1.1-T5 / 2016, Technical University of Cluj-Napoca (2016-2017).

Significant results

Articles in ISI rated journals, in the past 5 years:
1. C. Aciu, D. L. Manea, D. A. Iluțiu – Varvara*, "Study Regarding the Micro Filler Effect of Sludge Resulting from Steel Pickling". *Metals, vol. 11(2), 2021, pp. 361-372.*
2. D. A. Iluțiu – Varvara, M. Tintelecan, C. Aciu, I. M. Sas – Boca, "Reuse of the Steel Mill Scale for Sustainable Industrial Applications". Proceedings vol. 63 (1), 2020, pp. 14 – 17.
3. D. A. Iluțiu – Varvara, C. Aciu, M. Tintelecan, I. M. Sas – Boca, "Assessment of Recycling Potential of the Steel Mill Scale in the Composition of Mortars for Sustainable Manufacturing". Procedia Manufacturing vol. 46, 2020, pp.131–135.

4. D. A. Iluțiu – Varvara, M. Tintelecan, C. Aciu, I. M. Sas – Boca, A. Hădărean, T. Rus, R. Mare, "An Assessment of the Substance Losses from Charge Composition Used to the Steelmaking – Key Factor for Sustainable Steel Manufacturing". Procedia Manufacturing, vol. 32, 2019, pp. 15-21.
5. R. Mare, A. Hădărean, T. Rus, D. A. Iluţiu – Varvara, T. V. Chira, "Modelling of an Improved Hybrid Cooler Used in Sustainable Buildings". Materials Science and Engineering 471 (2019) 022032.
6. C. Aciu, D. A. Iluţiu – Varvara, D. L. Manea, Y. A. Orban, F. Babota, "Recycling of Plastic Waste Materials in the Composition of Ecological Mortars". Procedia Manufacturing, vol. 22, 2018, pp. 274-279.
7. I. M. Sas – Boca, D. I. Frunza, D. A. Iluţiu – Varvara, I. Toma, "The Properties of Bimetallic Multi-layer (C45 and S235JR) and the Multi-layer Steel Made by Forging". Powder Metallurgy And Advanced Materials, vol. 8, 2018, pp.11-17.
8. M. Tintelecan, I. M. Sas – Boca, M. F. Pop, D. A. Iluţiu – Varvara," A New Technical Version of Wiping of the Steel Wire Surface after "Hot Dip" Zinc Coating". Procedia Manufacturing, vol. 22, 2018, pp. 93-98.
9. I. Aşchilean, I. Giurca, "Choosing a Water Distribution Pipe Rehabilitation Solution Using the Analytical Network Process Method". Water, vol. 10, 2018, pp. 484-490.
10. D. A. Iluţiu – Varvara, C. Aciu, C. M. Mârza, I. M. Sas - Boca, M. Tintelecan, "Assessment of Recycling Potential of the Oily Mill Scale in the Steelmaking Industry". Procedia Manufacturing, vol. 22, 2018, pp. 228-232.
11. C. M. Mârza, G. D. Corsiuc, D. A. Iluţiu–Varvara, E. Ceuca, "Case Study Regarding the Conversion Efficiency of Small Horizontal Axis Turbines". Procedia Engineering, vol. 181, 2017, pp. 641-648.
12. D. A. Iluţiu–Varvara, C. M. Mârza, F. V. Domniţa, I. M. Sas-Boca, M. Tintelecan, "An Assessment of the Metallic Iron Content from Metallurgical Wastes - Essential Factor for Sustainable Development in the Steelmaking Industry". Procedia Engineering, vol. 181, 2017, pp. 357-362.
13. D. A. Iluţiu–Varvara, C. Aciu, E. M. Pică, C. Sava, "Research on Chemical Characterization of the Oily Mill Scale for Natural Resources Conservation". Procedia Engineering, vol. 181, 2017, pp. 439-443.
14. I. Aşchilean, M. Iliescu, N. Ciont, I. Giurca, "The Unfavourable Impact of Street Traffic on Water Distribution Pipelines". Water, vol. 10, 2018, pp. 1086-1094.
15. D. A. Iluţiu – Varvara, "Researching the Hazardous Potential of Metallurgical Solid Wastes". Polish Journal of Environmental Studies (Pol. J. Environ. Stud.), vol. 25, no. 1, 2016, pp. 147-152.
16. C. Aciu, C. Roman, D.A. Iluţiu - Varvara, C. Puia, O. Cadar. Plastering Mortar with Antibacterial and Antifungal Properties. Romanian Journal of Materials, vol. 46, no.2, 2016, pp. 160 – 166.
17. D. A. Iluţiu–Varvara, C. M. Mârza, C. Aciu, A. Hădărean, F. V. Domnița, I. M. Sas - Boca, A. M. Mihu, "An Assessment of Pollution with Volatile Organic Compounds in the Electric Arc Furnaces". Procedia Technology, vol. 22, 2016, pp. 452-456.

Significant solutions:
New technologies for industrial wastes minimization;
New technologies for hazardous wastes minimization;
New methods for environmental factors pollution control;
New technologies for improvement the environment quality;
New methods for improvement the quality of industrial microclimate.

Products and technologies:
New materials for building services;
Technologies with low environmental impact.

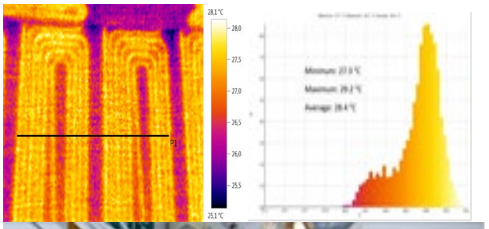
The offer addressed to the economic environment

Research & development	Research and development for industry by using applied research. Research and development of new methods and technologies with low environmental impact. Recovery of industrial wastes / Recycling of industrial wastes. Research and development of new methods and technologies for hazardous wastes treatment. Research and development of new materials for building services. Research and development of advanced materials for building services.
Consulting	Consultancy for the industrial or academic environment, according to the skills of the research group members, in the following domains: Environmental Engineering; Indoor air quality (IAQ); Outdoor air quality (OAQ); Prediction of the environmental quality factors; Advanced materials; Wates management; Materials with Special Properties; Materials for Building Services.
Training	Training courses according to the skills of the research group members. Training courses in environmental factors pollution control. Training courses in environmental quality analysis. Training courses in industrial wastes and hazardous wastes. Training course in prediction methods for environmental quality factors. Training courses in waste management. Training courses in materials for building services. Training courses in indoor air quality (IAQ). Training courses in outdoor air quality (OAQ). Training courses in quality of industrial microclimate.

WATER & ENERGY SYSTEMS

Contact details

Name	**Water & Energy Systems**
Acronym	**WESYS**
Logo	WESYS
Site	www.wesys.utcluj.ro
Address	128-130, 21 Decembrie 1989 Street, 3rd Floor, Room 317, Cluj-Napoca, Romania
Faculty Department	Faculty of Building Services Engineering
Telephone	+40 264 202 558
Fax	
Director	Assoc.Prof. Dr. Eng. Eugen Vitan
e-mail	eugen.vitan@insta.utcluj.ro



Sustainability				
Material↓ Material properties →	CO2 emission equivalent	Embodied Energy	LCC*	Utilities amount
UM→	[CO2 eq.]	MJ/kg	[Euro/year]	
Concrete	0.107	0.75	3.08	0.92
PVC-U	3.23	67.5	4.72	0.35
HDPE	2.52	84.4	5.15	0.26
GRP	8.1	100	3.06	0.32
Vitrified clay	0.55	7.9	2.54	0.96
Shares	0.3	0.3	0.4	

* Dn 600, road, 2 m deep

Areas of expertise

Water systems: Surveillance and measurements in water and sewer systems, Material selection methods, Water treatment, Water management
Energy in buildings: Energy performance certificate, Energy management, Thermal imaging, HVAC performance monitoring, Indoor Air Quality (IAQ)

Team

Assoc.Prof. Dr. Eng. Eugen Vitan, Assoc.Prof. Dr. Eng. Ciprian Bacoţiu, Assoc.Prof. Dr. Eng. Florin Domniţa, Assist.Prof. Dr. Eng. Anca Hoţupan, Assist.Prof. Dr. Eng. Cristina Iacob, Assist.Prof. Dr. Eng. Anagabriela Deac, Assist.Prof. Dr. Eng. Gelu Chisăliţă, Assist.Prof. Dr. Eng. Adriana Hădărean, Assist.Prof. Dr. Eng. Roxana Mare, Assist.Prof. Dr. Eng. Marius Fetea, Assist. Dr. Eng. Constantin Cilibiu.

Representative projects

"Study on the assessment of rainfall products by hydrological and hydrotechnical methods for 450 ha, elaboration of the 3D model and definition of their collection solutions", contract with industry, 2018.
"Water balance in county water supply systems, algorithms and applications for a county system", contract with industry, 2018.
"Shaping the degradation effects of water quality in distribution systems, associated with the situations of large discontinuities of consumption", contract with industry, 2016.
"Design of drinking water and sewage systems, expansions, rehabilitation", contracts SAMTID, POS, POIM, 2004-2019.
"Method of choice of materials for urban infrastructure", Life Cycle Analysis (LCC), SSM Engineering tool (based on Global utility method), contract with industry, 2014.
"Research and development of a membrane Reactor for the production of pure hydrogen usable in supplying fuel cells", collaboration with ICSI Râmnicu Vâlcea, 2010.
"Design and realization of the combustion pile assembly. Experimental determinations in order to establish functional performance. Elaboration of technical documentation to achieve a combination of hydrogen and air-powered combustion cells with a useful electrical power of up to 1kW", collaboration with ICSI Râmnicu Vâlcea, 2006.
"Measurements for determining the performance of thermal rehabilitation works of buildings and related installations", contract with industry, 2011.
"Methodology for calculating the energy performance of buildings, indicative norm Mc001/2006: Revision methodology; Review/elaboration of comments and examples of application", collaboration with UTCB, 2017.
"Good Practice Guide for achieving the optimum cost levels of the minimum energy performance requirements of the various categories of buildings", collaboration with UTCB, 2018.

Significant results

The most representative publications of the past 5 years:

1. E. Vitan, T. Rus, A. Hotupan and C. Cilibiu "The impact of the decreasing number of users on the evolution of a centralized heating system", IOP Conference Series: Materials Science and Engineering, Volume 1138 012043 Published: 2021
2. N. Stroia, D. Moga, E. Vitan et al.,"Internet based SCADA platform for monitoring strategic hydrotechnical structures", PROCEEDINGS OF 2016 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR), Cluj-Napoca, ROMANIA, May 19-21, 2016. Book Series: IEEE International Conference on Automation Quality and Testing Robotics, pp. 545-549, Published: 2016.
3. F. Domniţa, A. Hoţupan, A. Abrudan, P. Kapalo, "Case study regarding energy efficiency of a ventilation system with recuperative heat recovery", Journal of Applied Engineering Sciences, Volume 3(16)/2013, Issue 2, ISSN 2247-3769, pp. 27-32.
4. C. Bacoţiu, E. Vitan, A. Hoţupan, P. Kapalo, "Pipe material selection for urban sewerage systems", No Conference Proceedings of Scientific Papers, CASSOTHERM 2017, Technical University of Košice, Civil Engineering Faculty, Institute of Building and Environmental Engineering, pp. 15-21, ISBN 978-80-553-2894-2.
5. A. Hoţupan, "Alternative methods for dimensioning gravitational sewer pipes", International Scientific Conference CIBv 2017, 3-4 November 2017, Braşov, pp. 391-396.
6. L. Văcariu, O. Creţ, A. Hângan, C. Bacoţiu, "Water Parameters Monitoring on a Cyberwater Platform", Proceedings of the 20th International Conference on Control Systems and Computer Science, CSCS20, 2nd International Workshop on Cyberinfrastructures for Natural Resources Management, CyRM-2015, May 27-29, 2015, Bucharest, Romania, pp. 797-802, ISBN: 978-1-4799-1780-8/15, DOI: 10.1109/CSCS.2015.24.
7. M. Muste, C. Bacoţiu, D. Thomas, "Evaluation of the slope-area method for continuous streamflow monitoring", Proceedings of the 38th IAHR World Congress, September 1-6, 2019, Panama City, Panama, pp. 121-130, DOI:10.3850/38WC092019-1860.
8. C. Iacob, A. Deac, T. Chira, A. Bolboacă, "Study on optimizing the operation of a wastewater treatment plant in Romania", International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, 2018, Viena, pp. 477-484.
9. A. Deac, C. Iacob, "Reverse osmosis, the optimum solution for membrane water treatment", International Scientific Conference CIBv 2016, BULLETIN OF THE TRANSILVANIA UNIVERSITY OF BRASOV - SERIES I: ENGINEERING SCIENCES, Brasov 2016, pp. 271-276.
10. C. Iacob, A. Deac, T. Chira, A. Bolboacă, "Study of performance indicators at a waste water treatment plant, in Romania", International Multidisciplinary Scientific GeoConference Surveying Geology and Mining Ecology Management, SGEM, 2018, Albena, pp. 695-702.
11. A. Hoţupan, C. Bacoţiu, "A study for choosing the hydrogen production method in Romania by using multi-criteria decision analysis", International Scientific Conference CIBv 2016, BULLETIN OF THE TRANSILVANIA UNIVERSITY OF BRASOV, VOL. 9 (58) SPECIAL ISSUE No.1, 2016, SERIES I, pp. 297-304, ISSN 2065-2127.

Products and technologies:

1. SSM (Safety and Sustainability Method) - Engineering tool for the selection of pipe material.
2. Equipment for the measurement of the HVAC performance and energy of buildings.
3. Algorithms for analyzing the performance of public water utilities systems.
4. Qualitative test rig for water magnetization devices.
5. Regulation norm Mc001, methodology for calculating the energy performance of buildings.
6. Good Practice Guide for achieving the optimum cost levels of the minimum energy performance requirements of the various categories of buildings

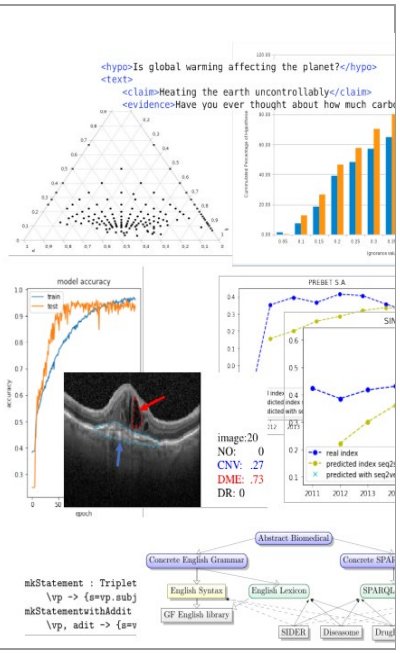
The offer addressed to the economic environment

Research & development	Problems associated with public water utilities systems, diagnostics, performance, quality. Energy performance measurements associated with buildings and the related installations. Decision support algorithms for the choice of materials and technologies.
Consulting	Performance measurements in the field of Building Services Engineering. Analysis of public water utilities systems, diagnostics, performance, quality. Decision support algorithms for the choice of materials and technologies.
Training	Problems associated with building services engineering and public water utilities systems, diagnostics, performance, quality, selection of materials and technologies

INTELLIGENT SYSTEMS GROUP

Contact details

Name	**Intelligent Systems Group**
Acronym	**ISG**
Logo	Intelligent Systems Group
Site	http://cs-gw.utcluj.ro/~isgroup http://research.utcluj.ro/tl_files/research/Research%20Domain/Computer%20Science/4_Letia.pdf
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science** **Computer Science Department**
Telephone	+40 264 401446
Fax	+40 264 594491
Director	Prof. Dr. Eng. Ioan Alfred Letia
e-mail	letia@cs.utcluj.ro



Areas of expertise

Explainable Artificial Intelligence -
Knowledge representation and reasoning - Semantic Web; Ontology engineering; Expert systems; Model checking
Natural Language Processing - Machine comprehension, Chatbots, Commonsense reasoning.
Multi-agent systems - Logic-based agents; Agreement technologies; Trust modelling; Ethics for AI, Dialogue protocols
Business processes re-engineering. - Decision support systems; Norm Compliance, E-contracts, Bayesian networks

Team

Prof. Dr. Eng. Ioan Alfred Letia; Assoc. Prof. eng. Emil Chifu, Assoc. Prof. eng. Adrian Groza, Assoc. Prof. eng. Radu Razvan Slavescu, Assoc. Prof. eng. Anca Marginean

Representative projects

"Extensive Capitalization of Experience in Spatial and Security Activities (VESS), project PN-III-P1-1.2-PCCDI-2017-0371 (2018-2020) - member
"Increasing understanding on climate change through public discourse analysis and stakeholders modelling", EEA Grant Romania-Norway, http://users.utcluj.ro/~agroza/projects/argclime/ (2016)
ARGSAFE, "Using Argumentation for Justifying Safeness in Complex Technical Systems", PNII-Capacitati, http://users.utcluj.ro/~agroza/projects/argsafe/ (2013-2015)
ASDEC, "Structural Argumentation for Decision Support with Normative Constraints", PNII-Capacitati, http://users.utcluj.ro/~agroza/projects/asdec/ (2013-2014)
LELA, "Collaborative Recommendation System in the Tourism Domain Using Semantic Web Technologies and Text Analysis in Romanian Language", PNII-INOVARE, http://users.utcluj.ro/~agroza/projects/lela (2013-2014)
GREEN-VANETS, "Improving Transportation Using Car-2-X Communication and Multi-Agent Systems", Intern project -Technical University of Cluj-Napoca, http://users.utcluj.ro/~agroza/projects/vanets
SmartCoDrive – Cooperative Advanced Driving Assistance System Based on Smart Mobile Platforms and Road Side Units", national research project (2012-2016) - member
ARGNET, "Structured Argumentation in a Web Context", PNII-IDEI 170, http://users.utcluj.ro/~agroza/argnet.html (2009-2011)
"Automating Online Dispute Resolution for B2B using multi-agent systems", CNCSIS-534 http://users.utcluj.ro/~agroza/odr.html (2007-2008)
"Collaborative/Competitive Multi-Agent System Oriented on E-Business", CNCSIS, (2005-2007)
"Software Agents for Processing the Semantic Web",CNCSIS, (2002-2004)

Significant results

The most representative publications of the past 5 years:

1. *C. Nica, V. P. Almasan, A.Groza. FastRCA-Seq: An efficient approach for extracting hierarchies of multilevel closed partially-ordered patterns, Knowledge-Based Systems, vol. 210, 106533, 2020.*
2. A. Groza, P. Ozturk, R.R. Slavescu, A. Marginean. "Climate Change Opinions in Online Debate Sites", In Computer Science and Information Systems, vol. 17 (1), 2020
3. A. Groza. Interleaved Argumentation and Explanation in Dialog in Logic, Cognition, Games, College Pub., 2020

4. A. Marginean, A. Groza, S.D. Nicoara, G. Muntean, R.R. Slavescu, I. A. Letia. “Towards Balancing the Complexity of Convolutional Neural Network with the Role of Optical Coherence Tomography in Retinal Conditions”, IEEE 15th International Conference on Intelligent Computer Communication and Processing (ICCP), 2019
5. A. Farcas, A. Marginean. “EmotionSense: Real-time Emotional Feedback from the Audience”, IEEE 15th International Conference on Intelligent Computer Communication and Processing (ICCP), 2019
6. R. R. Slavescu, C. Masca and K. C. Slavescu. “Sequence Labeling for Extracting Relevant Pieces of Information from Raw Texts Medicine Descriptions”. MEDITECH , Springer, Singapore, pp. 215-219, 2019
7. A. Marginean and G. Pricop. "On the Impact of Semantic Roles on Text Comprehension for Question Answering." In International Conference on Mining Intelligence and Knowledge Exploration, pp. 53-63. Springer, Cham, 2018.
8. A. Onaciu, A. Marginean, “Ensemble of Artificial Neural Networks for Aspect Based Sentiment Analysis”, IEEE 14th International Conference on Intelligent Computer Communication and Processing (ICCP), 2018
9. A. Marginean, “Question answering over biomedical linked data with grammatical framework”, in *Semantic Web: Interoperability*, *Usability, Applicability*, vol. 8, no. 4, pp. 565-580, 2017
10. D. Toniuc and A. Groza, "Climebot: an argumentative agent for climate change," in 2017 13th IEEE ICCP International Conference on Intelligent Computer Communication and Processing, (ICCP), 2017, pp. 63-70.
11. Slavescu, R. R.; Oltean, M. N.; Torok, A. P.; et al., Automatic Learning of Medical Text Annotation Rules - a Case Study on Endoscopies 5th International Conference on Advancements of Medicine and Health Care through Technology (MEDITECH), 2016, IFMBE Proceedings Volume: 59 Pages: 248-251 Published: 2017
12. S. Contiu and A. Groza, "Improving remote sensing crop classification by argumentation-based conflict resolution in ensemble learning," *Expert Systems with Applications*, vol. 64, pp. 269-286, Dec 2016.
13. S. A. Gomez, A. Goron, A. Groza, I. A. Letia, “Assuring safety in air traffic control systems with argumentation and model checking”, in *Expert Systems with Applications*, vol. 44, pp. 367—38, 2016.
14. I. A. Letia, A. Goron, “Model checking as support for inspecting compliance rules in flexible processes”, in *Journal of Visual Languages and Computing,* vol. 28, 2015, pp. 100--121
15. A. Groza, I. A. Letia, A. Goron, S. Zaporojan, “A formal approach for identifying assurance deficits in unmanned aerial vehicle software”, in *Advances in Intelligent Systems and Computing Series*, vol. 1089, Springer, 2014

Significant solutions:
Automatic Diagnosis of retina conditions using deep learning; Analysing arguments on social media; Machine comprehension and natural language processing for chatbots; Recurrent networks for pedestrian identification with pose estimation; Crop classification from satellite images using ensemble learning; Checking compliance of business processes with description logic; Checking compliance against safety standards (e.g. Hazard Analysis at Critical Control Points)**;** Contributions to fundamental research in argumentation and demonstrate innovative technologies validated in real-world scenarios such as safety standards, justifying audit decisions, and structured arguments for medical decision support. Controlled Natural Languages with Grammatical Framework.

Products and technologies:
1.Train and visualize deep neural network for OCT B-scans (https://github.com/ancamarginean/retina_amd)
2. Chemical Reaction Network analysis tool (http://cs-gw.utcluj.ro/~anca/tools.html) CoNtRol
3. GFMEd (http://cs-gw.utcluj.ro/~anca/tools.html)- translating questions about drugs and diseases from English to SPARQL.
4. PEARLS (http://cs-gw.utcluj.ro/~srazvan/prj/perlas/) - Personal Expectations Aware Recommender of Landmarks and Sites
5. OntoEG (Ontology-based Essay Grading), 2015 (http://users.utcluj.ro/~agroza/tools/ontoeg/) Automated essay grading using ontologies and textual entailment.
6. AHP-OntoEval (AHP Ontology Evaluation), 2014, (http://users.utcluj.ro/~agroza/tools/ahp) Ontology evaluation system based on analytic hierarchy process.

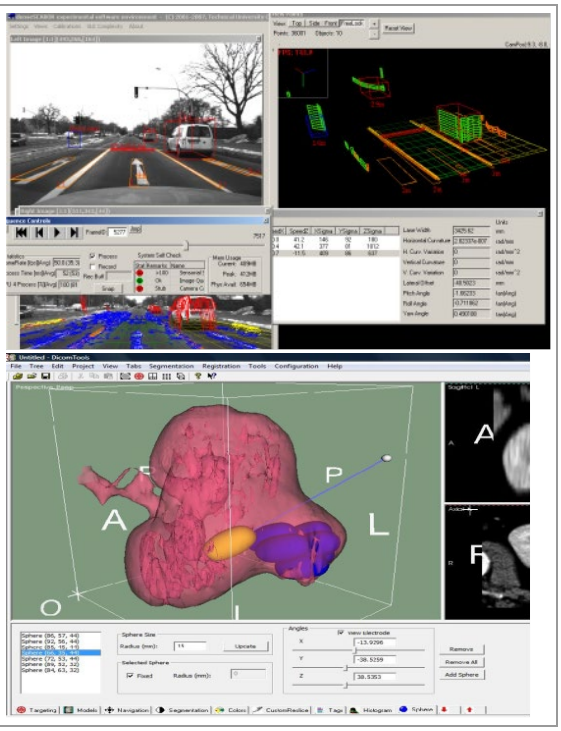
The offer addressed to the economic environment

Research & development	Medical data and financial data analysis with machine learning. Natural language processing Norm compliance: verifying business processes against norm compliance and quality standards like HACCP or ISO 22000. Model checking of business processes against ISO-like quality standards. Support for dispute resolution for Small and Medium Enterprises in case of contract breach. Semantic-based business process re-engineering. Decision support systems based on domain-based safety arguments. Logistic planning. Agent oriented technology in support of e-business. Representing and reason on business rules for e-commerce applications. Modelling and simulating trust on the Web. Semantic search of business products. Opinion mining for e-business.
Consulting	Machine learning: design, train and evaluate models Consulting, design, research and prototyping on development of semantic-based intelligent systems. Applied engineering services: engineering safety critical systems, business process re-engineering, model checking verification, ontology engineering.
Training	**Explainable Artificial Intelligence: human-agent models for XAI** **Semantic Technologies:** ontology engineering, reasoning on ontologies, linked data, OWL, RDF **Model checking:** Computation Tree Logic, Kripke models, hybrid logics. **Agent-based programming:** Semantic Web services, multi-agent technologies

IMAGE PROCESSING AND PATTERN RECOGNITION RESEARCH CENTER

Contact details

Name	**Image Processing and Pattern Recognition Research Center**
Acronym	**IPPRRC**
Logo	
Site	www.cv.utcluj.ro
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Computer Science Department**
Telephone	+40 264 202395
Fax	+40 264 594491
Director	Prof. Dr. Eng. Sergiu Nedevschi
e-mail	Sergiu.Nedevschi@cs.utcluj.ro



Areas of expertise

Image processing and pattern recognition: -Color, grayscale and 3D image processing**;** Automatic image and media annotation
Stereovision based sensorial perception: Stereovision; Dense optical flow; Object detection, classification and tracking; Real-time computer vision
Object detection, classification and tracking: use of deep learning and probabilistic model-based techniques for object detection, classification and tracking from grayscale, colour and 3D information
Advanced driving assistance and Autonomous mobile systems: -Sensorial perception; Environment representation; Risk assessment, Autonomous vehicles. Autonomous drones
Medical image analysis:-Enhancement; Segmentation; Recognition; Prediction; Structured reporting; Ultrasonography, CT, MRI

Team

Prof. Dr. Eng. Sergiu Nedevschi, Prof. Dr. Eng. Radu Danescu, Assoc. Prof. Dr. Eng. Tiberiu Mariţa, Prof. Dr. Eng. Florin Oniga, Assoc. Prof. Dr. Eng. Raluca Brehar, Assoc. Prof. Dr. Eng. Mihai Negru, Assoc. Prof. Dr. Eng. Ion Giosan, Assoc. Prof. Dr. Eng. Delia Mitrea, Assist. Prof. Dr. Eng. Cristian Vicas, Assist. Prof. Dr. Eng. Anca Ciurte, , Assist. Prof. Dr. Eng. Andrei Vatavu, Assist. Prof. Dr. Eng Robert Varga, Assist. Dr. Eng. Diana Borza, Dr. Eng. Arthur Costea, Assist. Prof. Dr. Razvan Itu
Phd. students: Eng. Marius Drulea, Eng. Catalin Golban, Vlad Miclea, Andra Petrovai, Mircea Muresan

Representative projects

SEPCA, "Visual Semantics and Integrated Control for Autonomous Systems", code PN III-P4-ID-PCCF-2016-0180, (2018-2022)
MULTISPECT, "Multispectral environment perception by fusion of 2D and 3D sensorial data from the visible and infrared spectrum", code PN-III-P4-ID-PCE-2016-0727, (2017-2019), https://cv.utcluj.ro/multispect/
UP Drive, "Automated Urban Parking and Driving", H2020 project, http://up-drive.eu/ (2016-2020)
MULTIFACE, "Multifocal System for Real Time Tracking of Dynamic Facial and Body Features", PN-II-RU-TE-2014-4-1746 project, (2015-2017). https://cv.utcluj.ro/multiface/index.php/home.en.html
"Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating Systems", FP7 ARTEMIS (2014-2017).
Road surface measurement and modeling, funded by Rober Bosch GMBH, (2013-2016)
PAN-ROBOTS, **"Plug and Navigate ROBOTS for smart factories"**, FP7 project, (2012-2015)
CoMoSef, **"Co-operative Mobility Services of the Future",** Eureka project, (2012-2015)
INTERSAFE-2, **"Cooperative Intersection Safety"**, FP7 project, http://cv.utcluj.ro/intersafe-2.html (2008-2011)
SMARTCODRIVE, **"Cooperative Advanced Driving Assistance System Based on Smart Mobile Platforms and Road Side Units"**, PNII PT PCCA (Joint Applied Research Project), http://cv.utcluj.ro/smartcodrive/ (2012-2016)
AMHEOS, **"Automatic Medium and High Earth Orbit Observation System Based on Stereovision"**, PNII PCCA (Joint Applied Research Project), http://cv.utcluj.ro/amheos/ (2012-2016)
MULTISENS, **"Multi-scale multi-modal perception of dynamic 3D environments based on the fusion of dense stereo, dense optical flow and visual odometry information"**, PNII-Idei, http://cv.utcluj.ro/multisens/ (2011-2016)

Significant results

The most representative publications of the past 5 years:

1. A.D. Costea, A. Petrovai, S. Nedevschi, "Fusion Scheme for Semantic and Instance level Segmentation", *Proceedings of 2018 IEEE Intelligent Transportation Systems Conference (ITSC)*, Maui, Hawaii, USA, November 4-7, 2018, pp. 3469-3475.
2. D. Borza, R. Itu, R. Danescu, "In the Eye of the Deceiver: Analyzing Eye Movements as a Cue to Deception", *Journal of Imaging*, Vol. 4, No. 10, 2018, Art. No. 120.
3. V. Miclea, S. Nedevschi, „Real-Time Semantic Segmentation-Based Depth Upsampling Using Deep Learning", Proceedings of 2018 IEEE Intelligent Vehicles Symposium (IV), Changshu, China, June 26-30, 2018, 2nd best applicative paper
4. M. Drulea, A. Vatavu, S. Mandici, and S. Nedevschi, "AN OMNIDIRECTIONAL STEREO SYSTEM FOR LOGISTIC PLANTS. PART 1: CALIBRATION AND MULTI-CHANNEL RECTIFICATION," *Proceedings of the Romanian Academy Series a-Mathematics Physics Technical Sciences Information Science*, vol. 18, no. 1, pp. 89-97, Jan-Mar 2017.
5. M. Drulea, A. Vatavu, S. Mandici, and S. Nedevschi, "AN OMNIDIRECTIONAL STEREO SYSTEM FOR LOGISTIC PLANTS. PART 2: STEREO RECONSTRUCTION AND OBSTACLE DETECTION USING DIGITAL ELEVATION MAPS," *Proceedings of the Romanian Academy Series a-Mathematics Physics Technical Sciences Information Science*, vol. 18, no. 3, pp. 265-272, Jul-Sep 2017.
6. D. Borza, R. Danescu, R. Itu, A. S. Darabant, "High-Speed Video System for Micro-Expression Detection and Recognition", *Sensors*, Vol. 17, No. 12, 2017, Art. No. 2913
7. A Ciurte, S Nedevschi, I Rasa, "Systems of nonlinear algebraic equations with positive solutions", *Journal of Inequalities and Applications* 2017 (1), 178, 2017
8. R. Varga, AD.Costea, H. Florea, I.Giosan, S. Nedevschi, "Super-sensor for 360-degree Environment Perception: Point Cloud Segmentation Using Image Features", *2017 IEEE Intelligent transportation Systems Conference (ITSC)*, Yokohama, Japan, October 16-19, 2017, pp. 1183-1190, best student paper award
9. D. Mitrea, S. Nedevschi, M. Abrudean, M. Lupsor-Platon, and R. Badea, "The Role of the Textural Microstructure Co-occurrence Matrices in the Automatic Detection of the Cirrhosis Severity Grades from Ultrasound Images", *Control Engineering and Applied Informatics*, vol. 18, pp. 96-106, Dec 2016.
10. C. Vicas, S. Nedevschi, "Detecting Curvilinear Features Using Structure Tensors", *IEEE Transactions on Image Processing*, vol. 24, no. 11, pp. 3874 – 3887, Nov 2015.
11. M. Negru, S. Nedevschi , RI Peter, "Exponential Contrast Restoration in Fog Conditions for Driving Assistance", *IEEE Transactions on Intelligent Transportation Systems*, vol. 16, no. 4, pp. 2257-2268, Aug 2015.
12. A. Vatavu, R. Danescu, S. Nedevschi, "Stereovision-Based Multiple Object Tracking in Traffic Scenarios Using Free-Form Obstacle Delimiters and Particle Filters", *IEEE Transactions on Intelligent Transportation Systems* , Vol. 16, No. 1, pp. 498-511, Feb 2015.
13. V. Popescu, S. Nedevschi, R. Danescu, T. Marita, "A Lane Assessment Method Using Visual Information Based on a Dynamic Bayesian Network", *Journal Of Intelligent Transportation Systems*, vol. 19. no. 3, pp. 225-239, Jul 2015.

Significant solutions:

High accuracy dense stereovision; High accuracy dense optical flow; Stereovision based ego-motion estimation; Lane detection and tracking; Detection and classification of painted road objects; Obstacle detection and tracking; Obstacle classification; Perception & representation of unstructured environments; Forward collision detection; Dynamic environment perception; High level reasoning on perception and domain knowledge; Automatic image annotation; Omnidirectional stereovision, Deep learning based detection, semantic segmentation, panoptic segmentation; Spatio-temporal and appearance based representation of 3D environment.

Products and technologies:

1. Real-time stereovision-based perception solution stance sensorial system for highways
2. Real-time stereovision-based sensorial system for city driving assistance functions
3. Real-time stereovision-based advanced driving assistance for cooperative intersection safety.
4. Real-time GPU based solutions for accurate dense stereovision and accurate dense optical flow estimation.
5. Ground-base long baseline observation system for automatic detection and ranging of Low Earth Orbit objects.
6. Automatic visual annotation system
7. Medical diagnosis assistance system based on ultrasonic image texture analysis, for detection of diffuse diseases, malign and benign liver tumours, prostate cancer
8. Omnidirectional stereovision for surrounding perception used for robotic applications
9. Spatio-temporal and apparence based representation for environment representation
10. Panoptic segmentation solutions

The offer addressed to the economic environment

Research & development	Sensory perception based on 3D depth sensors and colour cameras: organization, identification and interpretation of the sensory information for environment representation and understanding. Advanced driving assistance and Autonomous mobile systems: environment perception and representation, risk assessment, planning. Medical imaging: textural analysis, probabilistic segmentation and machine learning for assisted diagnosis from ultrasonography and tomography.
Consulting	Consulting, design, research and prototyping towards development of 2D and 3D sensors based solutions for multiple industrial and scientific fields, autonomous mobile systems.
Training	Image processing, Pattern recognition, Deep Learning, Perception, Autonomous mobile systems

DISTRIBUTED SYSTEMS RESEARCH LABORATORY

Contact details

Name	**Distributed Systems Research Laboratory**
Acronym	**DSRL**
Logo	DSRL Distributed Systems Research Laboratory
Site	http://dsrl.coned.utcluj.ro
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Computer Science Department**
Telephone	0264-202352, 0264-401443, 0264-401236
Fax	0264-401443
Director	Prof. Dr. Eng. Tudor Cioara
E-mail	Tudor.Cioara@cs.utcluj.ro

Areas of expertise

DSRL has extensive experience in many fields of the distributed systems related research areas such as:

- Energy efficiency in large scale distributed systems
- IoT and Blockchain technology
- Ambient assisted living (AAL)
- Big data analytics and Machine Learning
- Multidisciplinary optimization
- Complex systems modelling, simulation, optimization and adaptation
- Bio-inspired optimization

DSRL carries out research activities within several EU H2020 / EU HE / PNIII projects and has developed techniques and tools for (i) nonlinear programming optimization of systems energy efficiency, (ii) energy flexibility assessment and budgeting, (iii) Demand Response load profile forecasting and estimation, (iv) load shifting/scheduling for energy consumption reduction, and (v) optimization of IT resources energy consumption. In the modelling and simulation domain DSRL has investigated and developed techniques for modelling of complex systems, machine learning for information extraction and decision making, multi-objective and multi-criteria problems solving using mathematical models and what-if model simulation. In relation with blockchain technology, DSRL has experience in the development of distributed shared ledgers, smart contracts, distributed peer to peer control and distributed consensus which has been successfully applied in domains such as management of smart grids and demand-response programs, ecosystem management and payment of ecosystem services trading, circular economy and smart manufacturing.

Team

Prof. Dr. Eng. Tudor Cioara, Prof. Dr. Eng Ioan Salomie, Assoc. Prof. Dr. Eng. Ionut Anghel, Assoc. Prof. Dr. Eng. Viorica Chifu, Assist. Prof. Dr. Eng. Cristina Pop, Assist. Prof. Dr. Eng. Marcel Antal, Assist. Prof. Dr. Eng. Claudia Antal, Eng. Dan Mitrea, Eng. Daniel Todea, Eng. Liana Toderean, Eng. Vlad Mihailescu, Eng. Vlad Blajan, Eng. Alexandru Rancea.

Representative projects

- **BRIGHT** - Boosting DR through increased communIty-level consumer engaGement by combining Data-driven and blockcHain technology Tools with social science approaches and multi-value service design, H2020 LC-SC3-EC-3-2020 (2020-2023), https://www.brightproject.eu/
- **H2HCare** - Social robot-based solution for elders' Care management and coaching after discharge from Hospital to Home, AAL-2019, (2020-2023), https://h2hcare-aal.eu/
- **ReMember-Me** - Smart assistant to prevent and detect cognitive decline, promote cognitive function and social inclusion among older adults, AAL-2019, (2020-2023), https://www.rememberme-aal.eu/
- **ReMind** – Robotic ePartner for Multitarget INnovative activation of people with Dementia, AAL-2017-026, (2018-2021), https://www.aalremind.eu/
- **CoolDC** - Data Centers Liquid Cooling: Novel Techniques for Optimal Thermal Flexibility Shifting and on-demand Waste Heat Re-use, PN-III-P1-1.1-PD-2019-0154, (2020-2022), http://coned.utcluj.ro/cooldc/
- **eDREAM** – enabling new Demand REsponse Advanced, Market oriented and Secure technologies, solutions and business models, H2020, (2018 – 2021), https://edream-h2020.eu/
- **Increasing the involvement of energy consumers at the level community by combining technologies of data analysis and blockchain**, PP H2020 10/2021, (2021-2023)

- **CATALYST** – Converting DCs in Energy Flexibility Ecosystems, H2020, (2017-2020), http://project-catalyst.eu/
- **MedGuide -** Integrated System for Coordinated Polypharmacy management in Elders with Dementia, AAL-2016-052, (2017-2019), http://medguide-aal.eu/
- **Distributed systems technology and services for electronic registration, transacting and processing of assets,** DSRL-MONTRAN USA, (2016-2019), ID 20143/2016
- **Eco2Cloud** – Technologies for efficient management and scheduling of cloud resources in cloud for reducing Alpis data centre energy consumption, PNCDI III – BG (2016-2018), http://coned.utcluj.ro/Eco2Cloud/index.html
- **OptiPlan** – Technologies for Digitalization, Analysis and Optimization of Manufacturing of Flow Regulators and Monitors at Emerson Factory, PNCDI III – BG (2016-2018), http://coned.utcluj.ro/OptiPlan/
- **GEYSER** - Green nEtworked Data Centres as EnergY ProSumErs in smaRt city environments, EU FP7, http://www.geyser-project.eu (2013-2016)
- **Elders-UP!** - Adaptive system for enabling the elderly collaborative knowledge transference to small companies, EU FP7 – PNCDI/II, Active and Assisted Living Programme AAL-2013-6, http://www.eldersup-aal.eu (2014-2016)
- **DIET4Elders** - Dynamic Nutrition Behaviour Awareness System for the Elders, EU FP7 – PNCDI/II, Active and Assisted Living Programme AAL-2012-5, http://www.diet4elders.eu/ (2013-2016)
- **GAMES** - Green Active Management of Energy in IT Service centres**,** EU FP7, ICT-2009-6.3: ICT for Energy efficiency, http://www.green-datacenters.eu/ (2010-2012)

Significant results

The most representative publications of the past 5 years:

1. C. Antal, T. Cioara, M. Antal, V. Mihailescu, D. Mitrea, I. Anghel, I. Salomie, G. Raveduto, M. Bertoncini, V. Croce, T. Bragatto, F. Carere, F. Bellesini, Blockchain based decentralized local energy flexibility market, Energy Reports, Volume 7, 2021, Pages 5269-5288, ISSN 2352-4847 IF:6.87 Q1
2. M. Antal, A.-A. Cristea; V.-A. Pădurean; T. Cioara; I. Anghel; C. Antal; I. Salomie, N. Saintherant, Heating Homes with Servers: Workload Scheduling for Heat Reuse in Distributed Data Centers. Sensors 2021, 21, 2879. IF:3.576 Q1
3. T. Cioara, M. Antal, V. T. Mihailescu, C. D. Antal, I. M. Anghel and D. Mitrea, Blockchain-Based Decentralized Virtual Power Plants of Small Prosumers, in IEEE Access, vol. 9, pp. 29490-29504, 2021 IF:3.367 Q2
4. C. D. Pop, M. Antal, T. Cioara, I. Anghel and I. Salomie, Blockchain and Demand Response: Zero-Knowledge Proofs for Energy Transactions Privacy, Sensors, 2020, 20, 5678. IF:3.576 Q1
5. I. Anghel; T. Cioara; D. Moldovan; M. Antal; C.D. Pop; I. Salomie; C.B. Pop; V.R. Chifu, Smart Environments and Social Robots for Age-Friendly Integrated Care Services. Int. J. Environ. Res. Pub. H. 2020, 17, 3801. IF: 3.39 Q1
6. M. Antal, C. Pop, T. Cioara, I. Anghel, I. Salomie, F. Pop, A system of systems approach for data centers optimization and integration into smart energy grids, Future Generation Computer Systems, April 2020. IF: 7.187 Q1
7. C. D. Pop, M. Antal, T. Cioara, I. Anghel, I. Salomie, M. Bertoncini, A Fog Computing Enabled Virtual Power Plant Model for Delivery of Frequency Restoration Reserve Services. Sensors 2019, 19, 4688. IF:3.576 Q1
8. C. D. Pop, M. Antal, T. Cioara, I. Anghel, D. Sera, I. Salomie, G. Raveduto, D. Ziu, V. Croce, M. Bertoncini, Blockchain-Based Scalable and Tamper-Evident Solution for Registering Energy Data. Sensors 2019, 19, 3033. IF:3.576 Q1
9. T. Cioara, I. Anghel, I. Salomie, M. Antal, C. Pop, M. Bertoncini, D. Arnone, F. Pop, Exploiting data centres energy flexibility in smart cities: Business scenarios, Information Sciences, 2019, ISSN 0020-0255 IF: 6.795 Q1
10. M. Antal, C. Pop, T. Petrican, A. V. Vesa, T. Cioara, I. Anghel, I. Salomie, E. Niewiadomska-Szynkiewicz, MoSiCS: Modeling, simulation and optimization of complex systems–A case study on energy efficient datacenters, Simulation Modelling Practice and Theory, 2019, ISSN 1569-190X IF: 3.272 Q1
11. C. Pop, T. Cioara, M. Antal, I. Anghel, I. Salomie and M. Bertoncini, Blockchain Based Decentralized Management of Demand Response Programs in Smart Energy Grids, Sensors 2018, 18(1), 162. IF:3.576 Q1
12. T. Cioara, I. Anghel, I. Salomie, L. Barakat, S. Miles, D. Reidlinger, A. Taweel, C. Dobre, F. Pop, Expert system for nutrition care process of older adults, Future Gen. Computer Systems, Vol. 80, March 2018, P. 368-383, IF:7.187 Q1
13. T. Cioara, I. Anghel, M. Bertoncini, I. Salomie, D. Arnone, M. Mammina, T. Velivassaki, M. Antal, Optimized flexibility management enacting Data Centres participation în smart Demand Response programs, Future Generation Computer Systems, Volume 78, Part 1, January 2018, Pages 330-342. IF: 7.187 Q1

Technological services (https://eeris.eu/ERIF-2000-000B-1205)**:**

1. Energy and blockchain services for smart grid
2. Energy efficiency and multidisciplinary optimization services
3. Green cloud scheduler service
4. Modelling and simulation services
5. Big data analytics platform as a service

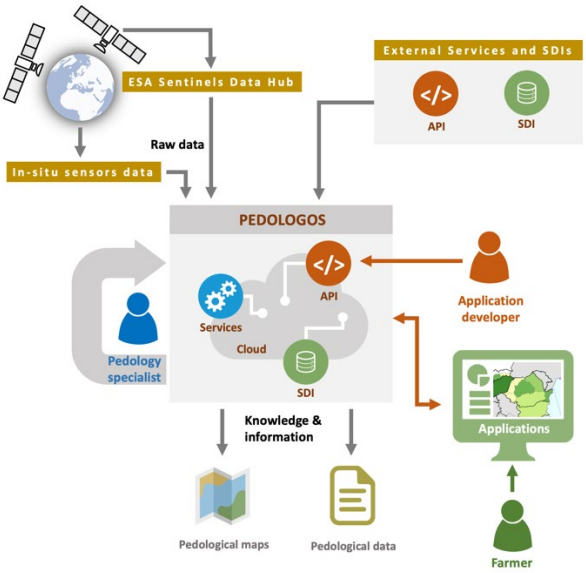
The offer addressed to the economic environment

Research & development	Core research areas: blockchain technologies, energy efficiency, ambient assisted living. Development services in the following domains: ambient assisted living, green computing and systems, intelligent systems, smart factories, bio-inspired distributed computing and systems, service oriented distributed computing and systems, autonomic computing and systems, distributed pervasive systems.
Consulting	Consulting services for development of blockchain-based decentralized systems, ambient assisted living systems, service oriented distributed systems, green systems, intelligent and bio-inspired systems.
Training	Training courses in the following domains: software engineering, information systems integration, web applications development, component-based and service-oriented distributed systems development, programming techniques and programming languages.

COMPUTER GRAPHICS AND INTERACTIVE SYSTEMS LABORATORY

Contact details

Name	**Computer Graphics and Interactive Systems Laboratory**
Acronym	**CGIS**
Logo	CGIS Computer Graphics and Interactive Systems
Site	http://cgis.utcluj.ro
Address	28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science, Computer Science Department**
Telephone	+40 264 401478
Fax	+40 264 594491
Director	Prof. Dr. Eng. Dorian Gorgan
e-mail	dorian.gorgan@cs.utcluj.ro



Areas of expertise

High performance graphical processing and visualization, parallel and distributed processing on cloud infrastructures, interoperability of HPC platforms, interactive application development, software platforms and applications for spatial data processing and visualization, visual analytics, machine learning based satellite data classification, interdisciplinary research in the domains of Earth Sciences and Earth Observations.

Team

Prof.Dr.Eng. Dorian Gorgan, Assoc.Prof.Dr.Eng. Victor Bâcu, Assoc.Prof.Dr.Eng. Teodor Ştefănuţ, Senior Lect.Dr.Eng. Cornelia Melenti, Senior Lect.Dr.Eng. Mihaela Ordean, Senior Lect.Dr.Eng. Adrian Sabou, Dr.Eng. Cristian Mocan, Assist.Prof.Eng. Constantin Nandra, Drd.Eng. Vlad Colceriu, Drd.Eng. Mihai Bica, Drd.Eng. Denisa Copandean, Drd.Eng. Elena Neacsu, Eng. Razvan Margin

Representative projects

NEARBY – "Visual Analysis of Multidimensional Astrophysics Data for Moving Objects Detection", STAR 2017, (2017-2019) http://cgis.utcluj.ro/nearby
HORUS – "Software Toolbox for Pedological Monitoring of Transylvanian Area based on Sentinel-2 Data", STAR 2017, (2017-2019) http://cgis.utcluj.ro/horus/
BIGEARTH - Flexible processing of big earth data over high performance computing architectures, ROSA STAR project (2013-2016), http://cgis.utcluj.ro/projects/bigearth
PECSA - Experimental Computer Services Platform for Scientific and Entrepreneurial Development, PN-II-PT-PCCA project (2014-2017), http://cgis.utcluj.ro/pecsa
IASON - Fostering sustainability and uptake of research results through Networking activities in Black Sea & Mediterranean areas, FP7 project, funded by the European Commission (2013 - 2015), http://www.iason-fp7.eu/
EnviroGRIDS - Building Capacity for a Black Sea Basin Observation and Assessment System supporting Sustainable Development. FP7 project, funded by the European Commission (2009 - 2013), http://www.envirogrids.net/.
SEE-GRID-SCI - SEE-GRID eInfrastructure for regional eScience. FP7 project, funded by the European Commission (2008 - 2010), http://www.see-grid-sci.eu/
KEYSTONE - Semantic keyword-based search on structured data sources, COST Action IC1302 (2013-2017), http://www.keystone-cost.eu/keystone/
ComplexHPC - Open European Network for High-Performance Computing in Complex Environments, COST Action IC0805 (2009-2013), http://complexhpc.org/
mEducator - Multi-type Content Repurposing and Sharing in Medical Education. eContentplus - Digital Content and Cognitive Systems Programme funded by European Commission (2009-2012), http://www.meducator.net/
GISHEO – On demand Grid services for high education and training in Earth observation. Funded by European Space Agency through PECS Programme (2008-2010), http://gisheo.info.uvt.ro/

Significant results

The most representative 10 publications of the past 5 years:

1. Gorgan D., Vaduvescu O., Stefanut T., Bacu V., Sabou A., Copandean D., Nandra C., Boldea C., Boldea A., Predatu M., Pinter V., Stanica A., "Nearby Platform for Automatic Asteroids Detection and Euronear Surveys". Proc. *1st NEO*

and Debris Detection Conference, Darmstadt, Germany, 22-24 January 2019, published by the ESA Space Safety Programme Office Ed. T. Flohrer, R. Jehn, F. Schmitz, (2019).
2. Bacu V., Stefanut T., Gorgan D., "Building soil classification maps using HorusApp and Sentinel-2 Products". Proceedings of the 2019 IEEE *15th International Conference on the Intelligent Computer Communication and Processing (ICCP)*, pp.79-85, (2019).
3. Nandra C., Gorgan D., "Usability evaluation of a domain-specific language for defining aggregated processing tasks". Proceedings of the 2019 IEEE *15th International Conference on the Intelligent Computer Communication and Processing (ICCP)*, pp.87-94, (2019).
4. Gorgan D., Rusu T., Bacu V., Stefanut T., Nandra N., "Soil Classification Techniques in Transylvania Area Based on Satellite Data". *World Soils 2019 Conference*, 2 - 3 July 2019, ESA-ESRIN, Frascati, Italy (2019).
5. Bica M., Gorgan D., "Data Locality Aware Algorithm for Task Execution on Distributed, Cloud Based Environments". *Advances in Intelligent Systems and Computing book series, vol. 611*, pp.557-566. Springer, Cham, ISBN 978-3-319-61565-3, (2018).
6. Gorgan D., Stefanut T., Bacu V., Copandean D., Nandra N., Vaduvescu O., "Optical Detection of Asteroids by NEARBY Platform". *Journal of Aeronautics & Aerospace Engineering*, Vol.7, (2018).
7. Stefanut T., Bacu V., Nandra C., Balazs D., Gorgan D. and Vaduvescu O., "NEARBY Platform: Algorithm for Automated Asteroids Detection in Astronomical Images". Proceedings of the 2018 IEEE *14th International Conference on the Intelligent Computer Communication and Processing (ICCP)*, pp.365-369, (2018).
8. Colceriu V.D., Stefanut T., Bacu V., Gorgan D., "Annotation and Position Recall from Low Grade Sensorial Data in the Context of Topological Railway Maps". *Journal of Studies in Informatics and Control, Special Issue on Advanced Services in Heterogeneous Distributed Systems, Vol.26(4)*, pp. 469-480, (2017).
9. Mazzetti P., Roncella R., Mihon D., Bacu V., Lacroix P., Guigoz Y., Ray N., Gregory G., Gorgan D., Nativi S., "Integration of data and computing infrastructures for earth science: an image mosaicking use-case", *Earth Science Informatics*, vol. 9, pp. 325-342, (2016).
10. Rodila D.D., Ray N., Gorgan D., "Conceptual Model for Environmental Science Applications on Parallel and Distributed Infrastructures", *Journal of Environmental Systems Research*, 4:23, (2015).

Software tools and platforms developed by CGIS Laboratory:

HORUS, HorusApp – platform and application for machine learning based soil classification by using satellite and spatial data processing.
NEARBY – cloud platform for astronomical moving objects detection and tracking.
BIGEARTH - platform to support the flexible description and adaptive processing of massive data over distributed HPC infrastructures.
WorDeL – workflow oriented language for flexible description of parallel and distributed processes.
gSWAT - gSWAT - platform and application allows the user to calibrate and execute the SWAT hydrological models in a flexible and interactive manner by taking advantage of the Grid infrastructure.
gSWATSim – is a collection of Web services supporting the Grid based calibration and execution of the SWAT hydrological models. It provides the SWAT related basic functionality required to develop a remote Web application.
GreenLand – is a platform and application for Grid based satellite image processing and visualization. The processing is described by an interactive graphical editor. The application is connected by standard geospatial services to spatial data repositories.
ESIP – Grid based satellite image processing platform. GreenLand is layered on ESIP and gProcess.
gProcess – Grid oriented task management and execution platform. gProcess is the basic platform for ESIP, Greenland, and gSWAT.
eGLE – eLearning Platform for Earth Science domain. It supports the development and execution of teaching materials including Grid based processing of satellite images, and connectivity by geospatial Web services.
GreenView – supports the refinement of surface and vegetation parameters in South East Europe region based on satellite images.
eTrace – eLearning platform for developing learning materials by graphical annotations on 3D objects.
MedioGrid – first national Grid infrastructure for research and education (2006).

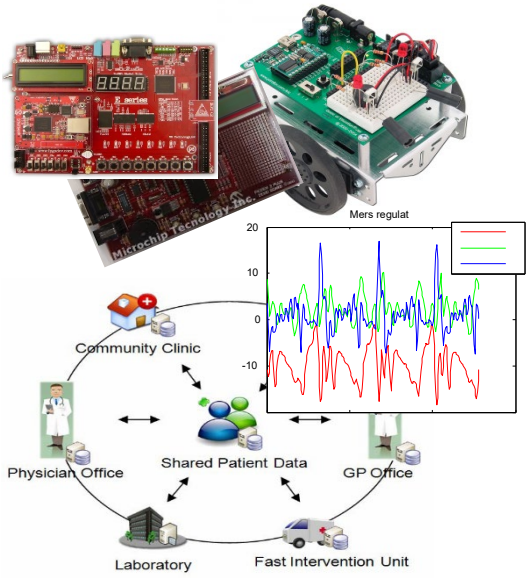
The offer addressed to the economic environment

Research & development in core areas	GPU cluster and Cloud computing High performance processing and visualization Geospatial service oriented architectures
Research & development in applied fields	Development of Earth Science oriented applications Earth Observation big data processing and classification
Consulting	Graphics modelling and simulation User interactive application development methodology High performance computation
Training	User interactive application development methodology Usability evaluation of graphical user interfaces

EMBEDDED AND DEDICATED COMPUTER SYSTEMS LABORATORY

Contact details

Name	**Embedded and Dedicated Computer Systems**
Acronym	**eDCS**
Logo	
Site	http://users.utcluj.ro/~sebestyen/eDCS.html http://research.utcluj.ro/tl_files/research/Research%20Domain/Computer%20Science/5_Sebestyen.pdf
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science** **Computer Science Department**
Telephone	+40 264 401489
Fax	+40 264 594491
Director	Prof. Dr. Eng. Gheorghe Sebestyen
e-mail	gheorghe.sebestyen@cs.utcluj.ro



Areas of expertise

Embedded systems, Dedicated digital systems,
Modeling, design and implementation of hardware & software systems adapted for various applications in industrial, medical and security domains.
IoT, IIoT, Industry 4.0, industrial networks, cyber-physical systems
Design of applications in the area of IoT, Industrial IoT and cyber-phisical systems
Real-time systems:
Real-time systems modeling and design, scheduling strategies and simulation
eHealth systems:
Design and implementation of distributed medical information systems and remote patient monitoring applications
Real random number generators and Cryptography:
Design and implementation of Real random generators based on the exploitation of physical phenomena known for their intrinsic random nature (eg quantum phenomena).

Team

Prof. Dr. Eng. Gheorghe Sebestyen, Prof. Dr. Eng. Alin Suciu, Assoc. Prof. Dr. Eng. Lucia Vacariu, Assist. Prof. Dr. Eng. Kinga Marton, s.l. Dr. Ciprian Oprisa
PhD students: Eng. Zoltan Czako, Eng. Francisc Muntean, Eng. Simion Tatar

Representative projects

1. Knowledge transfer on Sensor networks and RFID technologies, contract with CIA SA, Cluj, (2018-2019)
2. Anomaly detection in sensor networks, internal grant, 2017-2018
3. CyberWater, “Prototype Cyberinfrastructure-based System for Decision-Making Support in Water Resources Management”, ”, PNII PCCA (Joint Applied Research Project), http://cyberwater.cs.pub.ro/drupal-7.17/ (2012-2015)
4. Jeopard, “Java Environment For Parallel Realtime Development”, European FP7 project, http://www.jeopard.org/index.php?option=com_content&view=article&id=53&Itemid=58 (2007-2010)
5. PRO-INOVA, “Educational Program in Innovation Management”, POSDRU/21/1.5/G/24239, http://platinova.utcluj.ro/DetaliiProiect/index.php (2010-2012)
6. CryptoRand, “A High Performance System for Generation and Testing of Random Number Sequences for Cryptographic Applications”, http://cryptorand.utcluj.ro/ (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. G Kovács, G Sebestyen, A Hangan, “Evaluation metrics for anomaly detection algorithms in time-series”, Acta Univ. Sapientiae 11 (2), 113-130, 2019
2. Gheorghe Sebestyen, Anca Hangan, “Anomaly Detection Using System Identification Techniques”, ICINCO 2018 - International Conference in Informatics in Control, Automation and Robotics, Porto, Portugal, 2018
3. G. Sebestyén, A. Hangan, G. Kovacs, Z. Czako, “A Platform for Anomaly Detection in Time-Series”, SIP’2018, Budapest, 2018
4. 1. K. Marton, L. Pârvu, A. Suciu, “The Impact of Post-processing Functions on Random Number Sequences”, in Proceedings - 2018 IEEE 17th Roedunet International Conference,DOI: 10.1109/ROEDUNET.2018.8514140, 2018
5. Sebestyen, Gheorghe; Hangan, Anca; Czako, Zoltan; et al., “A Taxonomy and Platform for Anomaly Detection”, 21st IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR THETA) Location: Cluj Napoca, ROMANIA Date: MAY 24-26, 2018
6. G. Sebestyen and A. Hangan, "Anomaly detection techniques in cyber-physical systems," Acta Universitatis Sapientiae Informatica, vol. 9, no. 2, pp. 101-118, Dec 2017.
7. K. Marton, A. Zaharia, S. Banescu, and A. Suciu, "Randomness Assessment of an Unpredictable Random Number Generator based on Hardware Performance Counters," Romanian Journal of Information Science and Technology, vol. 20, no. 2, pp. 136-160, 2017.
8. H. Sandor and G. Sebestyen-Pal, Optimal Security Design in the Internet of Things (2017 5th International Symposium on Digital Forensic and Security). New York: Ieee, 2017.
9. G. Hajmasan, A. Mondoc, and O. Cret, Dynamic Behavior Evaluation for Malware Detection (2017 5th International Symposium on Digital Forensic and Security). New York: Ieee, 2017.
10. K. Marton, B. Raluca, A. Suciu, and Ieee, "Counting Bits in Parallel," in 2017 16th Roedunet Conference: Networking in Education and Research(RoEduNet International Conference, New York: Ieee, 2017.
11. Gheorghe Sebestyen, „Real-time communications, from industrial networks toward IoT (Internet of Things)”, plenary presentation at *ICCC 2015*, Hungary, 2015
12. Gheorghe Sebestyen, Dan Muresan, Anca Hangan, “Road Quality Evaluation with Mobile Devices*”, proceedings of ICCC 2015*, Hungary 2015
13. Ciprian Oprisa, George Cabau, and Gheorghe Sebestyen Pal. “Semi-automated verdicts assignment for potentially malicious programs”, In *IEEE International Conference on Intelligent Computer Communication and Processing (ICCP)*, Cluj-Napoca, Romania, 2015

Tools and platforms developed:

AutomaticAi – Platform for artificial intelligence (AI) processing and anomaly detection – assures automatic selection and tooning of the best AI algorithm for a given classification problem

CARDIONET - Computerized healthcare system designed to provide tracking and management of patients with cardiovascular disease

PatInova - Platform type digital library for the acquisition, storage, processing and retrieval of information contained in patents

RTMultiSim - Integrated simulation and optimization of real-time systems on parallel and distributed structures

CryptoRand - Integrated high performance system for generating and testing sequences of random numbers for cryptographic applications

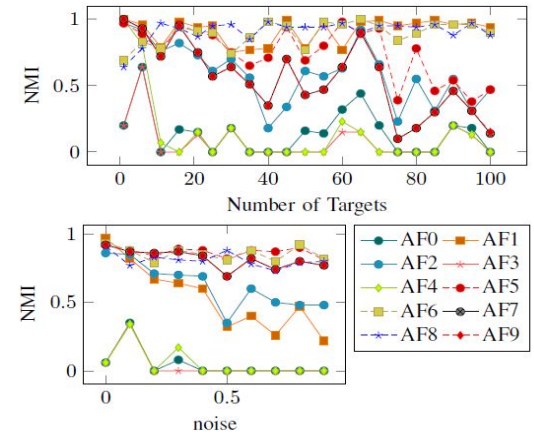
The offer addressed to the economic environment

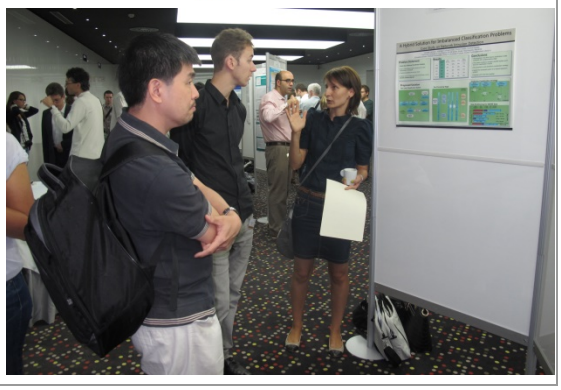
Research & development	Anomaly detection techniques based on artificial intelligence Security of cyber-physical systems Efficient strategies for scheduling communication and tasks on real-time parallel and distributed architectures; integrated modelling, simulation and optimization of real-time systems. Advanced techniques for generating random numbers with applications in cryptography. Portable medical devices - for continuous monitoring of patients for prophylactic treatment of chronic diseases. Sensor networks for monitoring rivers
Consulting	Cyber-physical Systems, Cyber-Security, IoT, IIoT, Design of dedicated systems based on specialized processors. Development of real-time applications. Cryptography and random number generators Evaluating the quality of a random number generators. Evaluation of algorithms using random number generators Industrial Informatics, industrial networks, According to TRNG design and implementation of user specifications, wireless Sensor Networks
Training	Computer Architecture, Industrial Informatics, Parallel and Distributed Computing, Quality systems, Cryptography.

KNOWLEDGE ENGINEERING GROUP

Contact details

Name	**Knowledge Engineering Group**
Acronym	**KEG**
Logo	
Site	http://keg.utcluj.ro
Address	26-28 Baritiu St., rooms C09, D01, M03; 400027, Cluj-Napoca, Romania
Faculty Department	**Automation and Computer Science Computer Science Department**
Telephone	+40-264202389
Fax	+40-264594491
Director	Prof. Dr. Eng. Rodica Potolea
e-mail	rodica.potolea@cs.utcluj.ro





Areas of expertise

Fundamental theoretical aspects:
Data analytics methods and learning models for natural language understanding, explainable graph analysis, heterogenous data integration and analysis.

Practical approaches:
Natural language understanding: topic extraction, sentiment analysis, contradiction detection, semantic role labeling, semantic parsing, intent detection and slot filling,
Graph analysis: community detection, functional networks construction from brain signal, functional networks (dynamic) analysis,
Heterogenous data: (i) IoT: preventive maintenance, failure prediction, user profiling, smart driving (ii) brain signal: artefact detection, burst detection and spike sorting, information coding.

Team

Prof. Dr. Eng. Rodica Potolea, Prof. Dr. Eng. Mihaela Dinsoreanu, Assoc. Prof.Dr. Eng. Camelia Lemnaru.
PhD Students: Cristian Lungu, Octavian Hasna, Florin Macicasan, Vlad Topan, Paul Parau, Timotei Dolean, Lucian Cristea, Ramona Tolas, Raluca Portase, Andrei Mihalca, Dan Toderici, Loredana Dan

Representative projects

"Predictive Maintenance", international project with third parties (Electrolux Italy), 7981/27.03.2019, (2019-2020).
ROBIN - "Robotii si Societatea: Sisteme cognitive pentru Roboti Personali si Vehicule Autonome", PNCDI III, (2018-2020)
"Next generation product service", international project with third parties (company Electrolux Italy), (2014-2017)
SWARA – Sistem mobil de asistare vocala in Reintegrarea Persoanelor cu Afonii Chirurgicale, PCCA-2013-4 No. 6/2014 (2014-2016)
NOKIA, "Context-sensitive recommendation systems", Bilateral grant, (2011-2012)
SEArCH, "Adaptive eLearning Systems using Concept Maps", National research grant funded by CNMP Program 4: Research partnership for priority domains, (2008-2011)
GridMOSI, "Virtual Organization using Grid Technology for High Performance Modeling, Simulation and Optimization", National research grant funded by ANCS, CEEX program, (2005-2008)
ArhiNet, "Integrated System for developing semantically-enhanced archival content", National research grant funded by CNMP Program 4: Research partnership for priority domains,(2007-2010)
FOOD-TRACE, "Integrated IT system for assuring traceability and quality control in food industry", National

research grant funded by ANCS, CEEX program, (2006 - 2008)
IntelPro, "Intelligent system for assisting the therapeutically decision at patients with prostate cancer", National research grant funded by ANCS, CEEX - INFOSOC, (2005-2008)

Significant results

The most representative publications of the past 5 years:

1. Liana-Daniela Palcu, Marius Supuran, Camelia Lemnaru, Mihaela Dinsoreanu, Rodica Potolea and Raul Cristian Muresan, Discovering discriminative nodes for classification with deep graph convolutional methods, in print Lecture Notes in Artificial Intelligence, Springer 2019
2. I. Stan, V. Suciu and R. Potolea, "Smart Driving Methodology for Connected Cars," 2019 23rd International Conference on System Theory, Control and Computing (ICSTCC), 2019, pp. 608-613.
3. A. Stoica, T. Kadar, C.Lemnaru, R. Potolea, M. Dînsoreanu: The Impact of Data Challenges on Intent Detection and Slot Filling for the Home Assistant Scenario. ICCP 2019: 41-47
4. Eugen-Richard Ardelean, Alexander Stanciu, Mihaela Dînsoreanu, Rodica Potolea, Camelia Lemnaru, Vasile Vlad Moca: Space Breakdown Method A new approach for density-based clustering. ICCP 2019: 419-425
5. Borsos, Zalan; Lemnaru, Camelia; Potolea, Rodica, Dealing with overlap and imbalance: a new metric and approach PATTERN ANALYSIS AND APPLICATIONS Volume: 21 Issue: 2 Pages: 381-395 Published: MAY 2018
6. Dolean, Samuel; Dinsoreanu, Mihaela; Muresan, Raul Cristian; et al., A Scaled-Correlation Based Approach for Defining and Analyzing Functional Networks, Book Series: Lecture Notes in Artificial Intelligence Volume: 10785 Pages: 80-92 Published: 2018
7. P. Parau, C. Lemnaru, M. Dinsoreanu, and R. Potolea, OPINION LEADER DETECTION (Sentiment Analysis in Social Networks). San Francisco: Morgan Kaufmann Pub Inc, 2017, pp. 157-170.
8. I. Barbantan, M. Porumb, C. Lemnaru, and R. Potolea, "Feature Engineered Relation Extraction - Medical Documents Setting," *International Journal of Web Information Systems*, vol. 12, pp. 336-358, 2016.
9. Hasna Octavian Lucian, Macicasan Florin Cristian, Dinsoreanu Mihaela, Potolea Rodica, "Modeling Sentiment Polarity with Meta-features to Achieve Domain-Independence", *6th* (IC3K), 2014, Vol. 553, Pp. 212-227,
10. M.Dinsoreanu, R. Potolea, "Towards a Unified Thematic Model for Recommending Context-Sensitive Content", in *Knowledge Discovery, Knowledge Engineering and Knowledge Management , Communications in Computer and Information Science*, vol. 415, 2013, pp. 68–83
11. M.Dinsoreanu, R.Potolea, "A scalable approach for Contradiction Detection driven by Opinion mining", *iiWAS2013*, pp. 7-15

Significant solutions:

End to end explainable graph classification pipeline
A new metric for assesing imbalance and overlap in data
AMR semantic parsing solution

Products and technologies:

1. Specific solutions in the Neuro Science domain (Artefact identification, Burst detection and spike sorting, Functional networks extraction and analysis)
2. Intent detection and slot filling – Eng & Ro languages
3. Topic extraction and representation - identifying the topic polarity in a given document; projecting (very) large (un)structured data to relevant dimensions and providing representation to allow knowledge extraction
4. Community detection- identifying clusters from implicit and/or explicit connections; community detection social data; opinion driven community detection. Contradiction Detection - opinion mining driven contradiction detection
5. User profiling - finding groups of individuals with similar features, finding/defining patterns for various profiles, predicting trends and future behavior applied to the educational domain
6. Recommendation systems - context sensitive, semantic driven recommendation systems for online advertisement and tourism
7. Medical decision support systems - assisting medical diagnosis in prostate cancer and rheumatoid diseases

The offer addressed to the economic environment

Research & development	Recommendation systems in different areas – developing prototype recommendation systems according to state of the art techniques in the field and up-to-date technologies. User profiling – finding groups of individuals with similar features, finding/defining patterns for various profiles, predicting trends and future behaviour. Data integration – designing unified data (warehouse) structures to integrate heterogeneous data sources, designing corresponding ETL processes. Decision support systems – extracting knowledge from organizational data, predicting evolutions, trends, identify relationships and correlations. End-to-end data analysis and (deep) machine learning pipelines
Consulting	Consulting, design, research and prototyping ML solutions for multiple industrial and scientific fields.
Training	Data Analysis, Machine Learning, Deep Learning

COMMUNICATIONS NETWORKS AND PROTOCOLS RESEARCH LAB

Contact details

Name	**Communications Networks and Protocols Research Lab**
Acronym	**LabRPC**
Logo	Communications Networks and Protocols Research Lab
Site	https://cnp.utcluj.ro/ https://research.utcluj.ro/index.php/computers-and-information-technology.html
Address	26-28 G. Baritiu, Str., room 16B, 400027, Cluj – Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Computer Science Department**
Telephone	+40-264-401246
Fax	+40-264-591690
Director	Prof. Dr. Eng. Vasile Teodor Dadarlat
e-mail	Vasile.Dadarlat@cs.utcluj.ro

Areas of expertise

Computer and communication networks, Communication protocols
- development of frameworks for efficient data transmissions within hybrid computer networks optimizing the use of available bandwidth; - design and implementation of Quality of Service aware frameworks; software defined networks; - security and virtualization

Wireless Sensor Networks
- development of new methods for routing within sensor networks, efficient use of resources and secure access to WSNs; - development of specific applications (Internet of Things) with WSNs, Sensors-Cloud systems, SDN and NFV

Grid communications
- grid based applications development (intensive computing, specific management)
- development of smart communication protocols, integration of real-time decision-making algorithms

Software products
- wireless and sensors communications, adaptive routing, secure communications, software networks, benchmarking

Applied IT&C technologies in different domains
- data acquisition and data management, environmental monitoring, strategic communication

Team

Prof. Dr. Eng. Vasile Teodor DADARLAT, Assoc. Prof. Dr. Eng. Emil CEBUC, Assoc. Prof. Dr. Eng. Adrian PECULEA, Assoc. Prof. Dr Eng. Bogdan IANCU, Asist. Prof. Drd. Eng. Sorin Buzura, Drd. Eng. Rudolf Kovacs

Representative projects

Cloud Cercetare UTCN – CLOUDUT, UTCN**,** Operational Program "Competitivitate 2014-2020" (POC), Manager infrastructure and acquisitions: Assoc. Prof. Dr. Eng. Emil CEBUC.

Study of security solutions for FinTech communications networks, categ. contracts with economic agents, 2020-2021, project coordinator: Assoc. prof. dr. ing. Bogdan IANCU.

Theoretical and experimental research on the development of sustainable employability of future IT engineers through cooperation with the business environment, Contract no. 12106 / 21.05.2020, Research-Development-Innovation Contract - RDI categ. contracts with economic agents, project coordinator: Assoc. prof. dr. ing. Adrian PECULEA.

Interconnection WSN (Wireless Sensor Network) networks for precision agriculture. Hybrid models of classification, recommendation and learning; Internal Competition for Research, Development, Innovation Grants UTCN CICDI 2017-2018, project coordinator: S.I. dr. ing. Bogdan IANCU.

Brained City: Innovative Development through Computerization of the Cluj-Napoca Urban Ecosystem ", innovative project of the ClujIT Cluster financed on POSCCE / Operation 1.3.3**,** subproject **"E-Health WSN Middleware:Middleware for adapting heterogeneous medical equipment and existing patients using an infrastructure WSN "** UTCN/AC project coordinator: Prof. dr. ing. Vasile-Teodor DADARLAT.

" Analysis and taxonomy of compromise solutions between security and the quality of services for wireless and mobile IP communications", postdoctoral project POSDRU/159/1.5/S/137516, 2014-2015, project coordinator: S.I. dr. ing. Adrian PECULEA.

GREEN-VANETS - Improving transportation using Car-2-X communication and multi agent systems, **Intern** CDI research project at Technical University of Cluj-Napoca, 2013 - 2014, member: Senior Lecturer Dr Eng. Bogdan IANCU.

QAF - "Quality of Service aware frameworks for networks and middleware", CNCSIS PNII Idei nr. 328, 2007 – 2010, project coordinator: Prof. dr. ing. Vasile-Teodor DADARLAT.

CG-UTCN, Technical University of Cluj-Napoca GRID Center, POS CCE Axa 2; Project 195, Op. 2.2.3, http://cgutcn.utcluj.ro/index.php (2009-2011), project coordinator: Assoc. Prof. dr. ing. Emil CEBUC.

Significant results

The most representative publications of the past 5 years:

1. S. Buzura, B. Iancu, V. Dadarlat, A. Peculea, E. Cebuc, Optimizations for Energy Efficiency in Software-Defined Wireless Sensor Networks. Sensors 2020, 20(17), 4779, https://doi.org/10.3390/s20174779
2. I. Iancu, B. Iancu, Designing Mobile Technology for Elderly. A Theoretical Overview, Technological Forecasting and Social Change, ISSN: 0040-1625, https://doi.org/10.1016/j.techfore.2020.119977
3. V. Lazar, S. Buzura, B. Iancu, V. Dadarlat, Anomaly Detection in Software Defined Wireless Sensor Networks Using Recurrent Neural Networks, 2021 IEEE 17th International Conference on Intelligent Computer Communication and Processing (ICCP 2021)
4. B. Oniga, L. Denis, V. Dadarlat, and A. Munteanu, "Message-Based Communication for Heterogeneous Internet of Things Systems," *Sensors*, vol. 20, no. 3, p. 861, Feb. 2020
5. S. Buzura, V. Dadarlat, B. Iancu, A.Peculea, E. Cebuc, R. Kovacs, Self-adaptive Fuzzy QoS Algorithm for a Distributed Control Plane with Application in SDWSN, International Conference on Automation, Quality and Testing, Robotics (AQTR), Cluj-Napoca, 2020.
6. B. Iancu, I. Illyes, V. Dadarlat, A. Peculea, Pollution Probes Application: the impact of using PVDM messages in VANET infrastructures for environmental monitoring, 2019 IEEE 15th International Conference on Intelligent Computer Communication and Processing, Cluj-Napoca, 2019.
7. B. Oniga, S. H. Farr, A. Munteanu and V. Dadarlat, "IoT Infrastructure Secured by TLS Level Authentication and PKI Identity System," 2018 Second World Conference on Smart Trends in Systems, Security and Sustainability (WorldS4), London, 2018, pp. 78-83.
8. A. Bumb, B. Iancu, E. Cebuc, Extending Cooja simulator with real weather and soil data, 17th RoEduNet Conference: Networking in Education and Research Technical University of Cluj-Napoca,September 6, 2018 – September 8, ISSN:2068-1038, pp.40-44,2018, IEEE
9. B. Oniga, V. Dadarlat, E. De Poorter and A. Munteanu, "A secure LoRaWAN sensor network architecture," 2017 IEEE SENSORS, Glasgow, 2017, pp. 1-3.
10. B. Iancu, R. Kovacs, V. Dadarlat, A. Peculea, Interconnecting heterogeneous non-smart medical devices using a wireless sensor networks (WSN) infrastructure, 5th International Conference on Advancements of Medicine and Health Care through Technology - Meditech 2016, Oct.2016, Romania

Significant solutions:

1. Drafting, development and implementation of a novel end-to-end quality of service sensitive framework for heterogeneous networks with admission control and self-adaptive bandwidth reconfiguration
2. Elaborating and proposing a new method for bandwidth organizing and dynamic allocation of bandwidth between classes in an autonomous system, to assure end-to-end QoS guarantees
3. Prototyping infrastructure for Software-Defined Networks and Software-Defined Wireless Sensor Networks solution development and testing

Products and technologies:

1. Data Center Room (str. Baritiu 26-28): HVAC system and hosts site grid with 512 core and 12 Terrabytes storage

Patents:

1. B. Iancu, A. Peculea, V. Dadarlat, "QoS sensitive framework for real-time transmission of information in heterogeneous computer networks and dynamic bandwidth allocation method", no. A/10017/2010, 2010
2. A. Peculea, B. Iancu, V. Dadarlat, Cerere de brevet - Metoda de alocare dinamica a latimii de banda si cadru de lucru pentru transmiterea in timp real a informatiilor in retele de calculatoare; Repository No.: A200900659/27.08.2009. Derwent Primary Accession Number: 2011-Q12644

Awards

1. B. Iancu, A. Peculea, V. Dadarlat – Diploma of Honour at: International Exhibition of Research, Innovation and Technological Transfer "Inventica", Iaşi, 2011
2. B. Iancu, A. Peculea, V. Dadarlat - Excellence Award and Silver Medal at: International Exhibition of Inventions 'ProInvent', Cluj-Napoca, 2011
3. B. Iancu, A. Peculea, V. Dadarlat - Silver Medal at: 3rd European Exhibition of Creativity and Innovation 'Euroinvent', Iaşi, 2011
4. Peculea, B. Iancu, V. Dadarlat - Excellence Award and Gold Medal at: International Exhibition of Inventions 'ProInvent', Cluj-Napoca, 2010
5. A. Peculea, B. Iancu, V. Dadarlat - Bronze Medal at: International Exhibition of Inventions 'Inventika' Bucureşti, 2010

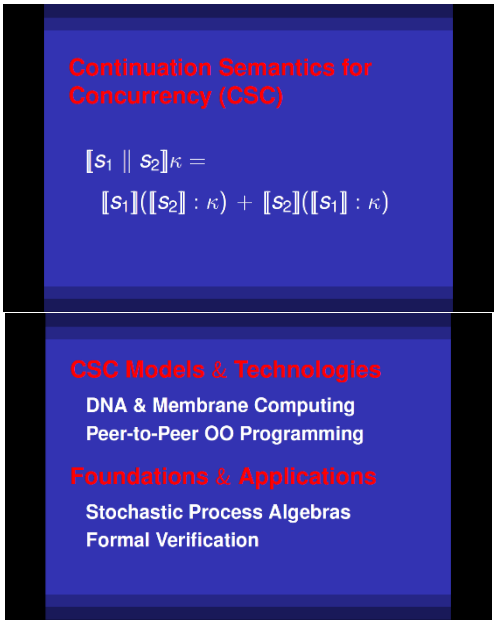
The offer addressed to the economic environment

Research & development	Network administration; QoS services implementation Software-defined networks and network function virtualization Wireless and sensors communications in Internet of Things Algorithms for power consumption in WSNs; QoS aware routing in hybrid networks Development of applications with high degree of computing requirements
Consulting	Network administration; Network design and testing QoS services implementation
Training	CCNA, CCNP, Security essentials, CyberOps Advanced issues in computer networks; Advanced issues in wireless sensor networks

FOUNDATIONS AND APPLICATIONS OF ADVANCED SOFTWARE TECHNOLOGY - RESEARCH GROUP

Contact details

Name	**Foundations and Applications of Advanced Software Technology – Research Group**
Acronym	**FAAST**
Logo	FAAST Fondations and Applications of Advanced Software Technology
Site	http://users.utcluj.ro/~eneia/faast.htm
Address	26-28 G. Baritiu Str., room M05, 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Computer Science Department**
Telephone	+40 264 401481
Fax	+40 264 594491
Director	**Prof. Dr. Eng. Eneia Nicolae Todoran**
e-mail	Eneia.Todoran@cs.utcluj.ro



Areas of expertise

Software Engineering & Programming Languages:
- Formal Methods, Programming Languages Design and Semantics

Software Solutions for Smart City:
- eBusiness, eAdministration, eHealth, Medical Databases
- Smart Traffic, Urban Traffic Image Processing
- Cloud infrastructure based integrated architectures

Semantic Models and Technologies
- Membrane Computing, DNA Computing
- Global Computing (GC), Image Processing in GC Context

Computational models based on Big Data and predictive analysis
-mathematical models of predictive analysis
- computational models

Team

Prof. Dr. Eng. Eneia Nicolae Todoran, Assoc.Prof.Dr. Paulina Mitrea, Eng. Dorin Simina

Representative projects

Next Generation Brained City, "Innovative development through informatization of the Cluj-Napoca urban ecosystem" - POSCCE/Op.1.3.3, no. 13.C01.010, cod SMIS 49752 (2014-2015); sub-projects:
- **ProcessPlayer , "Platform for the optimization of process flows for and between the public authorities"**, collaboration with ARXIA SRL & UBB (Contract POSCCE No.1CLT/800.003/8/29.04.2014 / Subproject SP1)
- **"Software services design for intelligent routing in urban road traffic in Smart City context"** (Contract POSCCE No.1CLT/800.003/8/29.04.2014 / Subproject SF1)

SemNat, "Semantic models and technologies for natural computing" - CAPABILITIES, Module III, Greece-Romania bilateral collaboration project, no. 582/16.07.2012 (2012-2014)

BETTY, "Behavioral Types for Reliable Large-Scale Software Systems", ICT COST Action IC1201, http://www.cost.eu/domains_actions/ict/Actions/IC1201 Management Committee members for Romania: Prof.Dr. Gabriel Ciobanu, Prof.Dr. Eneia Nicolae Todoran (2012-2016)

DFA@eInclusion, "Design for All for e-inclusion", FP7 project no. 033838, (2008-2010)

"Distributed System for Early Prevention, Monitoring and Treatment of the Cardio toxicity Induced by Chemotherapy and Radiotherapy in Oncologic Patients", PNII/IDEAS Project no. 1340/2009; (2008-2010)

GlobalComp, "Models, semantics, logics and technologies for global computing", ANCS, CNMP-PC, no. 11052/18.09.2007; (2007-2010).

Computational models based on Big Data and predictive analysis for the platform 24BrokerRo – POC/AP1, no 378/390054/01.10.2021

Significant results

The most representative publications of the past 5 years:

1. E.N. Todoran, “Continuation Semantics for Interaction and Concurrency”, *Proc. IEEE ICCP 2021* (in press), 2021.
2. E.N. Todoran, “Equivalence Classes in Performance Evaluation Programming”, *Proc. IEEE SYNASC 2021* (in press), 2021.
3. G. Ciobanu, E.N. Todoran, “A Study of Multiparty Interactions in Continuation Semantics”, *Proc. IEEE SYNASC 2020*, pp. 117-124, 2020.
4. E.N. Todoran, “Metric Semantics for Concurrent Languages Designed in Continuation-Passing Style”, *Proc. IEEE ICCP 2020*, pp. 521-528, 2020.
5. G. Ciobanu, E.N. Todoran, “A Semantic Investigation of Spiking Neural P Systems”, *Lecture Notes in Computer Science*, vol. 11399, pp. 108-130, Springer, 2019.
6. E.N. Todoran, “Continuation-based Metric Semantics for Concurrency”, *Proc. IEEE ICCP 2019*, pp. 551-559, 2019.
7. E.N. Todoran, “Towards Performance Evaluation Programming”, *Proc. IEEE SYNASC 2018*, pp. 302-309, 2018.
8. G. Ciobanu, E.N. Todoran, "Denotational semantics of membrane systems by using complete metric spaces", *Theoretical Computer Science*, vol. 701, pp. 85-108, Nov 2017.
9. E.N. Todoran, N. Papaspyrou, "Concurrency Semantics in Continuation-Passing Style", *Fundamenta Informaticae*, vol. 153, no. 1-2, pp. 125-146, 2017.
10. E.N. Todoran, “An Approach to Performance Evaluation Programming”, *Proc. IEEE SYNASC 2017*, pp. 320-329, 2017.
11. D. Mitrea, S. Nedevschi, Paulina Mitrea, et al, *The role of the cooccurrence matrix based on complex extended microstructures in discovering the cirrhosis severity grades within US images* - 10th International Congress on Image and Signal Processing, BioMedical Engineering and Informatics, CISP-BMEI 2017, pp.1-6, Shanghai, China, October 14-16, 2017. IEEE 2017
12. G. Ciobanu, E. N. Todoran, “Correct Metric Semantics for a Language Inspired by DNA Computing”, *Concurrency and Computation: Practice and Experience*, vol. 28(11), pp. 3042-3060, Wiley, 2016.
13. E.N. Todoran, P. Mitrea, “Semantic investigation of a control-flow subset of BPMN 2.0”, *Proc. IEEE ICCP 2015*, pp. 483-490, 2015.
14. I. Chifor, P. Mitrea, et al, “Mathematical methods for assessing the prognostic of fixed partial dentures resulting from evaluating a group of dental patients”, *Computational and Mathematical Methods in Medicine*, vol. 2014, article ID 984901, http://dx.doi.org/10.1155/2014/98490, 2014.
15. S. Brad, P. Mitrea, “Functional and strategic aligned clusters towards more united economies and sustainable development”, JCI 2015 Proceedings, *ISBN print: 978-3-8487-2429-1, ISBN online: 978-3-8452-6588-9, DOI: 10.5771/9783845265889-126*
16. A.I. Mitrea, S. Nedevschi, D. Mitrea, P. Mitrea, “Diseased tissue area detection and delimitation by fusion between finite difference methods and textural analysis”, *Proc. AQTR 2014*, pp. 1-5, 2014.
17. E.N. Todoran, D. Simina, et al, “Mobile Objects and Modern Communication Abstractions: Design Issues and Denotational Semantics”, *Proc. IEEE ISPDC 2011*, pp. 191-198, 2011.

Significant solutions:

Continuation semantics for concurrency, Denotational semantics for models of natural (membrane, DNA) computing, Denotational semantics for multiparty interaction, Denotational semantics for models of global computing, Performance Evaluation Programming – a programming paradigm supporting performance analysis and formal verification of concurrent systems using dependent types and model checking techniques

Products and technologies:

Prototype interpreter for mobile objects with multiparty interaction in peer to peer systems
Prototype interpreter for a language supporting performance evaluation programming
Prototype interpreter for a control flow subset of BPMN 2.0
Prototypes for medical image processing in global computing context
Communication prototypes for smart sensor networks

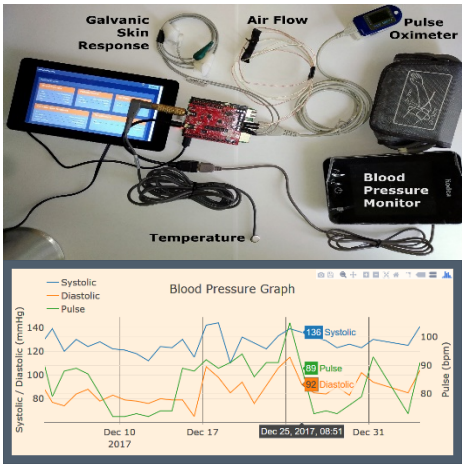
The offer addressed to the economic environment

Research & development	Formal design of reliable distributed software systems and programming languages
Consulting	Formal design of reliable distributed software systems and programming languages
Training	**Software Engineering:** software development paradigms, UML class diagrams and OO analysis, modeling interaction and behavior, architecting and designing software, software testing techniques and strategies, PRISM probabilistic model checking **Advanced Topics in Software Engineering and Programming Languages:** formal methods, denotational and operational semantics, stochastic process algebras, type systems

INTELLIGENT EMBEDDED SYSTEMS

Contact details

Name	**Intelligent Embedded Systems**
Acronym	**IES**
Logo	
Site	https://ieec.utcluj.ro/ies/index.php
Address	62/A Dr. V. Babes Str., 430083, Baia Mare, Romania
Faculty Department	**Faculty of Engineering** **Electric, Electronic and Computer Engineering Department**
Telephone	+40 264 202975
Director	Prof. Dr. Eng. Oniga Ștefan
e-mail	stefan.oniga@ieec.utcluj.ro



Areas of expertise

IES laboratory research topics are both fundamental (basic) and applied researches. The main topics for the theoretical research are learning systems, machine learning and for the applied research are wearable computing, mobile robotics, neural networks hardware implementation and ambient intelligent systems development.

Main research topics

- Implementation of Intelligent embedded systems with learning capacity and adaptive behaviour using field programmable gate areas (FPGA)
- Deep Learning Inference Acceleration using Adaptable accelerator cards
- Hardware implementation of artificial neural networks in FPGA circuits
- Assistive robots and automated guided vehicles (AGV)
- Activity and health status monitoring platform development
- e-Health and Ambient assisted living systems
- Human computer interfaces
- Intelligent sensors devices, adaptive interfaces with hardware implemented artificial neural networks

Team

Prof. Dr. Eng. Oniga Stefan, Assist. Prof. Dr. Eng. Buchman Attila, Assist. Prof. Dr. Orha Ioan, Assist. Prof. Dr. Lung Claudiu, Assist. Prof. Dr. Sabou Sebastian, PhD. Students: Alexan Anca, Alexan Alexandru, Pap Iuliu, Vancea Alexandru, Pop Adrian.

Representative projects

CRIMIGE: “Regional Center for Training and Monitoring of the Environmental Impact of Electrical Installations”, 2020-2022
Human Activity Recognition (HAR) and Physiological Parameters Monitoring Systems, 2018-2020
Theoretical and experimental contributions in the field of orientation and navigation of intelligent systems, 2017
Solutions regarding Intelligent Embedded Systems for Active and Assisted Living, 2016
Electromagnetic field simulation of capacitive touch sensors, 2015
Human activity recognition and physiological parameters monitoring systems, 2015
Intelligent embedded systems with learning capability and adaptive behaviour, 2013
“Research regarding the implementation of a neural network used to process signals generated by the muscular and nervous system.” CNCSIS Contract No. 171/02.10.2007, TD-11.
Electronic Nose, “Contributions regarding the study, the synthesis and the implementation of certain applications using systems with intelligent sensors” CNCSIS Contract No. 602/2007, code TD-277.
Sensorial system for hand gesture recognition using artificial neural networks, 2002-2005

Significant results

The most representative publications of the past 5 years

1. T. Majoros and S. Oniga, "Comparison of Motor Imagery EEG Classification using Feedforward and Convolutional Neural Network," IEEE EUROCON 2021 - 19th International Conference on Smart Technologies, 2021, pp. 25-29, doi: 10.1109/EUROCON52738.2021.9535592.

2. T. Majoros and S. Oniga, "Activity recognition using consumer-grade EEG device," 2021 13th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), 2021, pp. 1-6, doi: 10.1109/ECAI52376.2021.9515106.
3. Suto, J., Oniga, S., Lung, C. et al. Comparison of offline and real-time human activity recognition results using machine learning techniques. Neural Comput & Applic 32, 15673–15686 (2020). https://doi.org/10.1007/s00521-018-3437-x (IF: 4.774)
4. I. A. Pap, S. Oniga and A. Alexan, "Machine Learning EEG Data Analysis For eHealth IoT System," 2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2020, pp. 1-4, doi: 10.1109/AQTR49680.2020.9129966.
5. A. Alexan, A. Alexan and O. Stefan, "SoC based IoT sensor network hub for activity recognition using ML.net framework," 2020 IEEE 26th International Symposium for Design and Technology in Electronic Packaging (SIITME), 2020, pp. 184-187, doi: 10.1109/SIITME50350.2020.9292278.
6. A. Alexan, A. Alexan and O. Ştefan, "Machine learning activity detection using ML.Net," 2020 IEEE 26th International Symposium for Design and Technology in Electronic Packaging (SIITME), 2020, pp. 188-191, doi: 10.1109/SIITME50350.2020.9292294.
7. J Suto, S Oniga, Efficiency Investigation from Shallow to Deep Neural Network Techniques in Human Activity Recognition, Cognitive Systems Research, Volume 54, May 2019, Pages 37-49, (IF: 1.425)
8. Suto, Jozsef; Oniga, Stefan, Efficiency investigation of artificial neural networks in human activity recognition JOURNAL OF AMBIENT INTELLIGENCE AND HUMANIZED COMPUTING Volume: 9 Issue: 4 Special Issue: SI Pages: 1049-1060 Published: AUG 2018, (IF: 1.91)
9. Alexan, Alexandru; Alexan, Anca; Oniga, Stefan; et al., Assisted living personal tracker framework 2018 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR) Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
10. Suto, Jozsef; Oniga, Stefan, Music Stimuli Recognition in Electroencephalogram Signal ELEKTRONIKA IR ELEKTROTECHNIKA Volume: 24 Issue: 4 Published: 2018
11. Pap, Iuliu Alexandru; Oniga, Stefan; Orha, Ioan; et al., IoT-Based eHealth Data Acquisition System 2018 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR) Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
12. Suto, Jozsef; Oniga, Stefan; Sitar, Petrica Pop, Music Stimuli Recognition from Electroencephalogram Signal with Machine Learning Conference: 7th International Conference on Computers Communications and Control (ICCCC) Location: Oradea, ROMANIA Date: MAY 08-12, 2018, Pages: 260-264 Published: 2018
13. Suto, J.; Oniga, S.; Sitar, P. Pop, Feature Analysis to Human Activity Recognition INTERNATIONAL JOURNAL OF COMPUTERS COMMUNICATIONS & CONTROL Volume: 12 Issue: 1 Pages: 116-130 Published: FEB 2017
14. Suto, Jozsef; Oniga, Stefan; Sitar, Petrica Pop, Comparison of Wrapper and Filter Feature Selection Algorithms on Human Activity Recognition Conference: 6th International Conference on Computers Communications and Control (ICCCC) Location: Oradea, ROMANIA Date: MAY 10-14, 2016 Pages: 124-129 Published: 2016
15. S. Oniga and J. Suto, "Activity Recognition in Adaptive Assistive Systems Using Artificial Neural Networks," *Elektronika Ir Elektrotechnika*, vol. 22, pp. 68-72, 2016.
16. Oniga Stefan, Jozsef Suto, “Optimal Recognition Method of Human Activities Using Artificial Neural Networks” *MEASUREMENT SCIENCE REVIEW*, Vol. 15, Issue 6, Pp.323-327, Published: DEC 2015

Oniga Stefan – AGEPI Medal - International Fair of Inventions and Practical Ideas "INVEST-INVENT SIR 21" – Gesture recognition system.
Oniga Stefan, Pap Iuliu, Diploma of excellence of the Society of Inventors from Romania, for: “E-Health platform for measurement and monitoring physiological parameters” at the Maramures Inventors Salon, 2019.

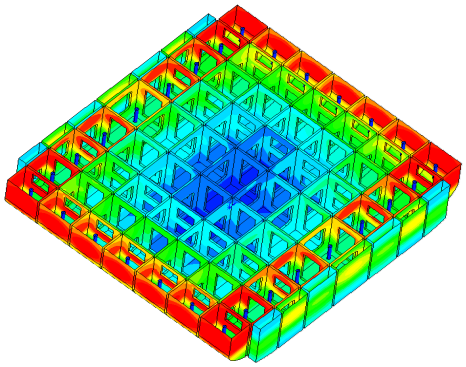
The offer addressed to the economic environment

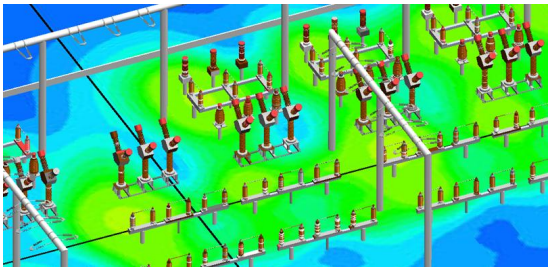
Research & development	Hardware implementation of artificial neural networks in FPGA circuits. Development of neural network’s specific blocks for rapid prototyping of application specific neural networks Intelligent sensors network Adaptive interfaces with learning capabilities able to adapt to the input signals changes Development of an intelligent platform (with learning capabilities and adaptive behaviour) for health condition monitoring of elderly or persons with disabilities, using wearable wireless sensor Mobile applications
Consulting	Embedded systems with microcontrollers and FPGAs Data acquisition systems
Training	Design with microcontrollers Design with FPGA circuits

NUMERICAL MODELLING AND ELECTROMAGNETIC COMPATIBILITY RESEARCH CENTER

Contact details

Name	**Numerical Modelling and Electromagnetic Compatibility Research Center**
Acronym	**NUMELEC**
Logo	
Site	http://ethm.utcluj.ro/numelec
Address	26-28 G. Baritiu str.,Room 16A & Calea Dorobantilor str. Building C, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electrical Engineering Electrotechnics and Measurements Department**
Telephone	+40 264 401244 / +40 722 560560
Fax	+40 264 592903
Director	Prof. Dr. Eng. Calin Munteanu
e-mail	Calin.Munteanu@ethm.utcluj.ro





Areas of expertise

Numerical modelling and optimal design of electromagnetic devices.
Multiphysics modelling for advanced device and technology developments. Multiphysics modelling for microelectronics - Power Integrated Circuits. Numerical modelling of the electromagnetic field behaviour in complex systems. Time-varying electromagnetic fields. High-frequency electromagnetic fields analysis and waves propagation. Optimal design of the electromagnetic devices and systems. Optimization algorithms in electro
magnetics. Evolutionary algorithms for the optimization of the electromagnetic devices

Electromagnetic compatibility
Pre-compliance and compliance tests for conducted and radiated disturbances (emissions and susceptibility) according to the IEC 61000 standards. Analysis of the electromagnetic interferences generated by HV lines on neighbourhood metallic structures. Computation and measurements of the electric and magnetic field values in vicinity of power lines and high voltage substations for compliance with the EMC EU Directive.

Electrochemical systems and cathodic protection
Manufacturing techniques using the electrochemical process; Software for simulation of the electrochemical processes; Mitigation of the electromagnetic interference effects of HVAC and HV power transmission lines on pipeline networks; Optimal design of the cathodic protection systems.

Team

Prof. Calin MUNTEANU, Prof. Vasile TOPA, Assoc. Prof. Marius PURCAR, Assoc. Prof. Laura GRINDEI, Assoc. Prof. Adina GIURGIUMAN (RACASAN), Assoc. Prof. Claudia PACURAR (RACASAN), Lecturer Claudia CONSTANTINESCU (HEBEDEAN), PhD stud. Sergiu ANDREICA, PhD stud. Marian GLIGA, PhD stud. Adrian BOJITA

Representative projects

iDev40 - „Integrated Development 4.0”, ECSEL Call H2020-ECSEL-2017-1-IA-TWO STAGE 6/1.1.3.H/26.11.2019.

Trade-IT - ”Innovative Technologies for Advanced Materials Recovery from IT and Telecommunication Waste”,PN-III-P1-1.2-PCCDI2017-0652, 2017.

Set4CIP - „Multiscale Multigrid Simulator of Electro-Thermo-Mechanical Processes from Power Integrated Circuits”,- PN-III-P2-2.1-BG-2016-0388, 2016.

CEMIVA - “Coupled analysis electromagnetic interference / vibration for the development of electric actuators dedicated to automotive applications with low emissions”, PN II – PT – PCCA – 2013 – 4 – 1019, 2014.

“Measurements of electric and magnetic field in 220 / 110 kV Turnu Severin Est substation”, Research contract with industrial partner ENERGOBIT SA, no. 36526/2019.

“Computing services, analysis, numerical modeling and experimental measurements of electromagnetic field values in locations proposed by the beneficiary” Research contract with industrial partner CEPROM SA, no. 52/2018.

“Measurements of electric and magnetic field in 220 / 110 kV Campia Turzii substation”, Research contract with industrial partner ENERGOBIT SA, no. 55/2017.

Significant results

The most representetive publications of the past 5 years:

1. A. Bojiţă, M. Purcar, V. Ţopa, R. Oneţ and M. Neag, "Modelling Thermally-Induced Mechanical Faults in Power Integrated Circuits Assemblies," 2020 IEEE 26th International Symposium for Design and Technology in Electronic Packaging (SIITME), 2020, pp. 342-345, doi: 10.1109/SIITME50350.2020.9292136.
2. Vermeșan H., Tiuc A-E, Purcar M., "Advanced recovery techniques of waste materials from IT and telecommunication equipment Printed Circuit Boards", Sustainability 2020, 12(1), 74; https://doi.org/10.3390/su12010074.
3. Bojita A., Purcar M., Boianceanu C., Topa V., "Efficient Computational Model Mesh of Thermo-Mechanical Phenomena in the Metal System of Power ICs", 25th THERMINIC International Workshop, LECCO, Italy, 2019.
4. Florea C.I., Bostan C., Simon D., Țopa V., Purcar M., "Extraction of Equivalent Mechanical Properties for Power ICs Metallization", 25th THERMINIC International Workshop, LECCO, Italy, 2019.
5. Constantinescu C., Munteanu C., Pacurar C., Racasan A,, Gliga M., Andreica S., "High Frequency Analysis of Bowtie Antennas", 11th International Symposium on Advanced Topics in Electrical Engineering, ATEE 2019, Bucharest, Romania, DOI 10.1109/ATEE.2019.8724972, WOS: 000475904500129, 2019.
6. Pacurar C., Topa V., Giurgiuman A., Munteanu C., Constantinescu C., Andreica S., Gliga M., "Modelling and Analysis of the Halbach Array Magnets", 11th International Symposium on Advanced Topics in Electrical Engineering, ATEE 2019, Bucharest, Romania, DOI 10.1109/ATEE.2019.8724977, WOS:000475904500134, 2019.
7. Bojita, A., Purcar, M., Boianceanu, C., Florea, C., Simon, D., & Topa, V. "A Simple Metal-Semiconductor Substructure Model for the Thermal Induced Fatigue Simulation in Power Integrated Circuits", *Lecture Notes in Mechanical Engineering*, DOI:10.1007/978-981-13-2273-0_3, 2019.
8. Constantinescu C., Munteanu C., Păcurar C., Răcășan A., "Influence of the Patch Antenna Feeding on their Parameters", Proc. of the 2018 International Conference and Exposition on Electrical and Power Engineering, EPE 2018, pp. 235-240, Iasi, Romania, ISBN: 978-1-5386-5062-2, ISSN: 2471-6855, WOS: 000458752200044, 2018
9. Bojita A., Boianceanu C., Purcar M., Florea C., Simon D. and Pleșa C., "A simple metal-semiconductor substructure for the advanced thermo-mechanical numerical modeling of the power integrated circuits", Journal of Microelectronics Reliability, Elsevier, Volume 87, pages 142-150, August 2018, https://doi.org/10.1016/j.microrel.2018.06.013.
10. Constantinescu C., Munteanu C., Pacurar C. et al., "Influence of the Patch Antenna Feeding on their Parameters", International Conference and Exposition on Electrical and Power Engineering (EPE) Book Series: International Conference and Exposition on Electrical and Power Engineering Pages: 235-240, 2018.
11. Gliga M., Racasan A., Munteanu C. "The Influence of Ferrite on the Spiral Inductors Inductance used for the Design of Wireless Power Systems", 7th International Conference On Modern Power Systems (MPS), 2017.
12. Racasan A, Munteanu C., Topa V. et al., "Analysis and Improvement Techniques for the Transfer Function of a Planar Low - Pass Filter", *Environmental Engineering and Management Journal*, Vol. 15, Issue 12, Pp. 2579-2586, 2016.
13. Paljanos A., Miclaus S., Munteanu C., "Occupational Exposure of Personnel Operating Military Radio Equipment: Measurements and Simulation", *Electromagnetic Biology and Medicine*, Vol.34, Issue 3, Pp.221-227, 2015.

Significant solutions:
3D mathematical model of Laplace equation with nonlinear boundary conditions for electrochemical applications using the boundary element method (BEM) and finite element method (FEM); Mathematical and numerical model based on "Level Set Method" for shape optimization; Mathematical and numerical model based on "Level Set Method" and Nodal displacement method (NDM) for moving boundary simulation in electrochemical applications of electro-corrosion and electrodeposition.

Products and technologies:
Software package for the full 3D numerical analysis of the electromagnetic interferences between HV lines and pipelines and the optimal design of the cathodic protection systems arrangement; Software package for the numerical computation of the electric and magnetic field values in the vicinity of power lines and inside substations and the optimal design of conductor arrangements for the field mitigation.

International Patents:
Van Den Bossche B. J. W.; Purcar M. I., International Patent Number: WO2008010090-A2; NL1032174-C2; WO2008010090-A3; EP2044242-A2; S2009288954-A1

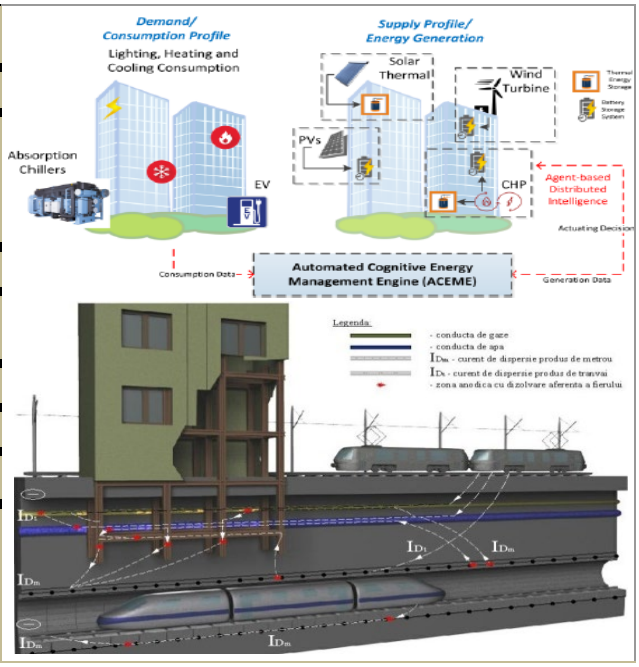
The offer addressed to the economic environment

Research & development	Multiphysics modelling; CAD in electrical engineering; Optimal design of the electromagnetic devices. EMC in electrical and electronics engineering Analysis and optimal design of complex electromagnetic device structures; EMC analysis and mitigation solutions by measurements and numerical modelling;
Consulting	EMC tests according to IEEE 61000 standards series for compliance with the EMC Directive and CE marking; Compliance with 2004/40/EC Directive regarding the human exposure to electromagnetic fields; Manufacturing techniques using the electrochemical process; Mitigation of the inductive and resistive effects of HVAC and HV power transmission lines on pipeline networks; Investigation of fault conditions: 1-phase and 3-phase short circuits discharge current to soil that can lead to coating stress and bridge potentials pipe-soil. Multiphysics modelling for advanced device and technology developments.
Training	Training and postgraduate education in modelling and simulation of electromagnetic and electrochemical problems and process based on the specific software in the research centre. EMC solutions in order to avoid compliance tests failure.

ENERGY TRANSITION RESEARCH CENTER

Contact details

Name	**Energy Transition Research Center**
Acronym	**EnTReC**
Logo	EnTReC
Site	https://lcmn.utcluj.ro/
Address	26-28 G. Baritiu Street, Room 53, Cluj-Napoca, 400027, Romania
Faculty	**Faculty of Electrical Engineering**
Telephone	+40 264 401462; +0744191609
Director	Prof. dr. eng. math. Dan D. MICU
Email	lcmn@et.utcluj.ro Dan.Micu@ethm.utcluj.ro



Areas of expertise

Energy Management; Energy Engineering; Energy Efficiency in Buildings & Industry; Energy Analytics & Numerical Tools; Energy Sustainability Engineering; Energy Consumption/Generation Profiling and Forecasting; Energy Optimisation at Building and Local Communities Level; Cognitive and Artificial Intelligence Energy Management Techniques; Energy Islands & Energy Cooperation; Sustainability and Climate Changes; Energy Culture and Consumer Behavior; Renewable Energy Sources Integration; nZEB adoption; Waste to Energy; Smart Grid; Energy Storage; Electromagnetic Field Numerical Modelling & Analysis; Electromagnetic Interferences; Electromagnetic Compatibility; Power Network Losses; Transient Overvoltage Analysis; Gas Insulated Substation.

Team

Members from Electrical Engineering Faculty:
Electrotechnics and Measurement Department: Prof. Dan D. MICU, Assoc. Prof. Denisa ȘTEȚ, Assoc. Prof. Mihaela CREȚU, Assoc. Prof. Laura DARABANT, Lecturer Levente CZUMBIL, Lecturer Andrei CECLAN, Prof. Radu A. MUNTEANU, Assoc. Prof. Ștefan CÎRSTEA, Assoc. Prof. Silviu ȘTEFĂNESCU, Assoc. Prof. Horia BELEIU, Assoc. Prof. Aurel BOTEZAN, Lecturer Cosmin DĂRAB, Dr. eng. Alexandru MUREȘAN; Drd. eng. Dacian JURJ; Drd. eng. Ștefan UNGUREANU; Drd. eng. Claudia MUREȘAN; Drd. eng. Bogdan BÂRGĂUAN; Eng. Timea FARKAS; Eng. Denisa BĂRAR; Eng. Medeea CĂPRAR; Stud. Mircea LĂNCRĂNJAN; Stud. Alexandru George BERCIU

Representative projects

GEAR at SME - *Generate Energy Efficient Acting and Results at Small & Medium Enterprises* – 894356, H2020-LC-SC3-EE-2020-2023: -, https://www.gearatsme.eu/
RE-COGNITION - *Renewable Cogeneration and Storage Technologies Integration for energy Autonomous Buildings* - H2020-LC-SC3-2018-2019-2020/H2020-LC-SC3-2018-RES, 815301- (2019-2022) https://re-cognition-project.eu/
SMEmPower Efficiency - *A holistic framework for Empoweri*
ng SME's capacity to increase their energy efficiency, H2020-LC-SC3-2018-2019-2020/H2020-LC-SC3-EE-2018, 847132, (2019-2022), https://smempower.com/
DR BOB - *Demand Response in Blocks of Building* - HORIZON 2020 – EE-2016: *s* – 696114, (2016-2019) http://www.dr-bob.eu/
MENs - *Meeting the energy professional skills,* HORIZON 2020-EE-2014-CSA, 649773, (2015-2017) http://www.mens-nzeb.eu/en/

Significant results

The most representative publications of the past 5 years

1. M. Cretu; L. Czumbil, B. Bargauan, A. Ceclan, A. Berciu, A. Polycarpou, R. Rizzo, Dan D. Micu: "Modelling and evaluation of the Baseline Energy Consumption and the Key Performance Indicators in Technical University of Cluj-Napoca buildings within a Demand Response programme: a case study", *IET Renewable Power Generation*, Vol. 14, Issue 15, pp 2864-2875, **2020**, DOI: 10.1049/iet-rpg.2020.0096

2. A. Muresan, L. Czumbil, Dan D. Micu, R. Andolfato, H. Nouri: "Investigating the Effect of Several Model Configurations on the Transient Response of Gas Insulated Substation During Fault Events Using an Electromagnetic Field Theory Approach", *Energies*, Vol. 13, Art.no. 6231, **2020**, DOI: 10.3390/en13236231
3. C. Darab, A. Turcu, H. Beleiu, S. Pavel, I. Birou, Dan D. Micu, , S. Ungureanu, S. Cirstea: „Hybrid load forecasting using gaussian process regression and novel residual prediction", *Applied Sciences*, Vol. 10, Issue 13, Art.no. 4588, **2020**, DOI: 10.3390/app10134588
4. D. Jurj, Dan D. Micu, L. Czumbil, A. G. Berciu, M. Lancrajan, D. Bărar: „Analysis of Data Cleaning Techniques for Electrical Energy Consumption of a Public Building", *55th International Universities' Power Engineering Conference*, 1-4 Sept. **2020**, Torino, Italy, DOI: 10.1109/UPEC49904.2020.9209781
5. A.M. Măgurean, L. Czumbil, D.L. Manea, Dan D. Micu: „Artificial Intelligence based Prediction Model for the Long-Term Heat Flux Losses through Ground Applied to Large Non-Residential Buildings", *Procedia Manufacturing*, ISSN: 2351-9789, vol. 32, pp. 434-441, **2019**, DOI: 10.1016/j.promfg.2019.02.237
6. H. Beleiu, I. Beleiu, S. Pavel, C. Darab: „Management of Power Quality Issues from an Economic Point of View", *Sustainability*, Vol. 10, Issue 7, Art.no. 2326, **2018,** DOI: 10.3390/su10072326
7. Y. Zhu, V. A. Rakov, M. D. Tran, W. Lyu, Dan D. Micu: "A Modeling Study of Narrow Electric Field Signatures Produced by Lightning Strikes to Tall Towers", *Journal of Geophysical Research: Atmospheres*, Vol. 123/18, Pp. 10.260-10.277, **2018,** DOI: 10.1029/2018JD028916
8. M. Ruba, F. Jurca, L. Czumbil, Dan D. Micu, C. Marțiș, A. Polycarpou & R. Rizzo: „Synchronous Reluctance Machine Geometry Optimisation through a Genetic Algorithm based Technique", *IET Electric Power Applications*, ISSN: 1751-8660, Vol. 12/3, pp. 431-438, **2018**, DOI: 10.1049/iet-epa.2017.0455
9. S. Cîrstea, C. Martiş, A. Cîrstea, A. Constantinescu-Dobra, M. Fülöp, „Current Situation and Future Perspectives of the Romanian Renewable Energy", *Energies*, **2018**, 11, 3289. https://doi.org/10.3390/en11123289. WOS:000455358300050
10. S. Cîrstea, C. Moldovan-Teselios, A. Cîrstea, A. Turcu, C. Darab, „Evaluating Renewable Energy Sustainability by Composite Index", *Sustainability*, **2018**, 10, 811. https://doi.org/10.3390/su10030811. WOS:000428567100238

Research and teaching stages (international collaborators)

University of Florida USA; San-Diego University, USA; Texas Southern University, USA; University of Chicago, USA**;** Lehigh University, USA; Temple University, USA; Beijing Jiaotong University, China; The University of Hong Kong; Shanghai Jiao Tong University, China; Novosibirsk State Technical University, Russia; Oita University, Japan; University of Sao Paolo, Brasil; Strathclyde University of Glasgow, Scotland; Brunel University London, UK; Teeside University, UK; Imperial College of London, UK; Cardiff University, UK; University of the West of England, UK; Cork Technological Institute, Ireland; Technical University of Dublin, Ireland; Technical University of Aachen, Germany; University of Novi Sad, Serbia; University of Nis, Serbia; Vrije Universitiet Brussel, Belgium; University of Padova, Italy; Federico II University Naples, Italy; Aristotle University of Salonic, Greece; Budapest University of Technology, Hungary; University of Sao Paolo, Brazil; Frederick University, Cyprus; Ecole Normale Superior Lyon, France; South Westphalia University, Germany; University of Western Macedonia, Greece; University of Cagliari, Italy; University of Novi Sad, Serbia**;** Universite de Technologie de Belfort-Montbeliard, France; University of Metz, France; University of Patras, Greece; University of Coimbra, Portugal.

Awards

- ***Best European Energy Service Project***, awarded by *EU Commission, Brussels*, **2019**.
- ***Eastern & Central Europe Region Institutional Energy Management Award***, awarded by *Association of Energy Engineers, New York, USA*, **2018**.

Romanian Energy Award – Special Jury Award, awarded by *Energynomics, Bucharest*, **2015**.

The offer addressed to the economic environment

Design and implementation of energy analytic tools for sustainable energy use

Applied energy services

Numerical modelling techniques of electrical/electronic engineering applications

Electromagnetic field numerical analysis and synthesis

Long life learning programmes for energy professionals (www.decidfr.utcluj.ro)

The education and training of energy professional is a statutory objective of the EnTReC.

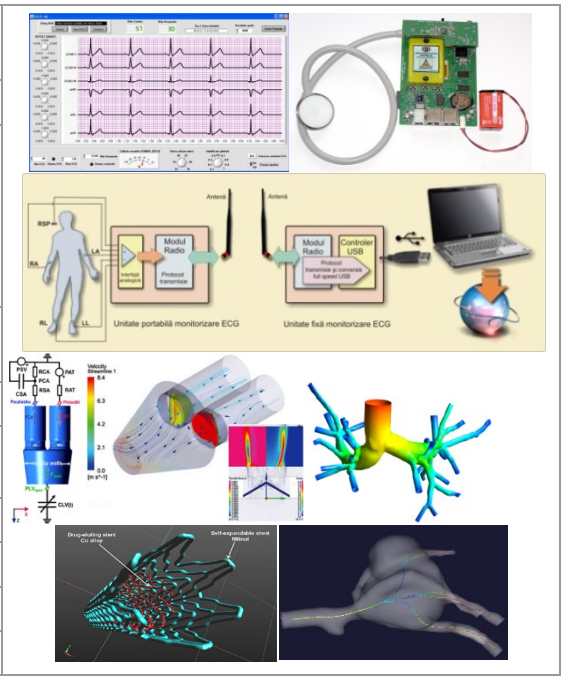
Create knowledge

Studies on increasing energy efficiency, integration of renewable energies and forward-looking technologies are our fundamental contribution to a sustainable transformation of the energy system.

MEDICAL ENGINEERING RESEARCH GROUP

Contact details

Name	**Medical Engineering**
Acronym	**ME**
Logo	Inginerie Medicală
Site	www.im.utcluj.ro
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electrical Engineering, Electrotechnics and Measurements Department**
Telephone	+40 264 401482, +40 264 402379
Fax	+40 264 594548
Director	Prof. Dr. Eng. Roman Nicolae Marius
e-mail	Marius.Roman@ethm.utcluj.ro



Areas of expertise

Laboratory of **Biomedical instrumentation, Applied medical electronics, Clinical engineering, Digital biosignal processing, Biometry**
Laboratory of **Biomedical Signal Processing, Biomedical Measurements**, **Biomedical Data Transmission**, **Medical Physics, Physiological modelling, Reverse engineering of cardiovascular devices, Medical Image Analysis**

Team

Prof. Dr. Eng. Radu Vasile Ciupa, Prof. Dr. Eng. Nicolae Marius Roman, Prof.Dr. Eng. Dan Rafiroiu, Prof. Dr. Eng. Mihai Munteanu, Assoc. Prof. Dr. Eng. Simona Vlad, Lecturer Dr. Eng. Anca Nicu, Lecturer Dr. Eng. Angela Lungu, Assoc. Prof. Med. Elena Gligor, Assoc. Prof. Dr. Med. Adrian Iancu, Senior Researcher Dr. Eng. Stefan Gergely, Dr. Eng. Vasile Pompas, Prof. Dr. Eng, Math, Dan Doru Micu, Drd. Eng. Ciprian Mugurel Fort

Representative projects

"COST Action MyWAVE CA17115", www.cost.eu/COST_Actions/ca/CA17115?management (2018-2023)
" Scaun Rulant Pentru Persoane cu Dizabilități Locomotorii ", (2019-2021)
"Burse doctorale si postdoctorale pentru cercetare de excelenta ", POSDRU/159/1.5/S/134378 UTCN, (2014-2015)
" VIPRO Platform ", PN-II-PT-PCCA-2013-4-2009, (2013-2016)
" Advancing University Education in Biomedical Engineering and Health Management in Kyrgyzstan", KyrMedu
MeDDiCA, "Medical Devices Design in Cardiovascular Applications", European FP7 project, www.meddica.eu
"Sensors and equipment for the quality control of various food supplies", PN II, (2007-2013)
"**Complex architecture for monitoring and medical data transmission,** Exploratory research project, (2009-2012)
SPINSTIM, **"Functional stimulation of the spinal cord"**, Romanian-Austrian bilateral contract, (2009-2011)
"Neural magnetic stimulation", PNII-IDEI, (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. Munteanu M.S., Magda A., Ciorap R., Rusu C. and Vladareanu L. – "EOG Signal processing algorithm used in eye movement detection", Proceedings of Modern Power System Conference 2019
2. Farago P., Băbțan A-M., Galatus R., Groza R., Roman N.M., Feurdean C.N., Ilea A. „*A Side-Polished Flourescent Fiber Sensor for the Detection of Blood in the Saliva"*, IFMBE Proceedings, volume 71, pp. 23-28, 2018, Springer International Publishing, ISBN 978-981-13-6206-4, ISSN 1680-0737
3. Iudean, D., Laze, P., Munteanu, R., **Munteanu, M.**, Mercea, V. – "Pilot -study of a low-cost iontophoresiss device" 2019 7th E-Health and Bioengineering Conference, EHB 2019, Iasi, Romania
4. Mureșan V., Roman N.M., Coloși T., Abrudean M., Stan O.P., Bunta O. „*Numerical Simulation of the Temperature Propagation in Superposed Biological Media with Applications in Dental Treatment"*, IFMBE Proceedings, volume 71, pp. 123-130, 2018, Springer International Publishing, ISBN 978-981-13-6206-4, ISSN 1680-0737
5. Ancău D., Roman N.M., Ancău M., „ Evaluating a Method of Offline Detection of P_3 Waves*"*, IFMBE Proceedings,

volume 71, pp. 139-143, 2018, Springer International Publishing, ISBN 978-981-13-6206-4, ISSN 1680-0737
6. Pop-Coman P., Roman N.M., Steopan M., Ispas V., Bugnar S. „ *Voice Controlled Weelchair for People With Disabilities "*, IFMBE Proceedings, volume 71, pp. 255-260, 2018, Springer International Publishing, ISBN 978-981-13-6206-4, ISSN 1680-0737
7. Holonec R., Vlad S., Roman A.I., Rápolti L. "Monitoring of Obstructive Sleep Apnea Using Virtual Instrumentation Techniques", 6th International Conference on Advancements of Medicine and Health Care through Technology; 17–20 October 2018, *IFMBE Proceedings*, vol 71 (2019), ISBN 978-981-13-6206-4, pp. 85-90. Springer, Singapore
8. Holonec R., Vlad S., Rapolti L. "Application for Detection of Epileptic Seizures", 6th International Conference on Advancements of Medicine and Health Care through Technology; 17–20 October 2018, Cluj-Napoca, Romania. *IFMBE Proceedings*, vol 71 (2019), ISBN 978-981-13-6206-4, pp. 91-96. Springer, Singapore
9. Fort C.M., Ciupe A.M., Vlad S., „An ECG Front-End Device based on ADS1298 Converter", Int. Conf. on Advancements of Medicine and Health Care through Technology; 12th-15th October 2016 Cluj-Napoca, Romania, *IFMBE Proceedings*, Vol. 59 (2017), ISBN 978-3-319-52874-8, pp. 99-102
10. C. M. Forț, S. Gergely and A. O. Berar "Development of Wireless Biomedical Data Transmission and Real Time Monitoring System" International Conference on Advancements of Medicine and Health Care through Technology; 12th - 15th October 2016, Cluj-Napoca, Romania IFMBE, vol.59, DOI: 10.1007/978-3-319-52875-5 pag.327-330
11. Forț C. M., Roman N. M., and Gergely S. "Development of Bluetooth Enabled Pediatric Temperature Monitoring Device" International Conference on Advancements of Medicine and Health Care through Technology; 17–20 October 2018, Cluj-Napoca, Romania, IFMBE, volume 71 DOI:10.1007/978-981-13-6207-1 pag.221-226,
12. Gergely S. and Fort C.M. "Integrated computing unit for autonomous solar tracker with concentrated power" 3th Bilateral meeting on green energy (12th ICPIM2019)
13. Kun R. Pop, Munteanu M., Rafiroiu D., "Development of a Complex Acquisition and Storage System of Medical Data used in a Clinical Environment" International Conference on Advancements of Medicine and Health Care through Technology , MEDITECH 2016 Book Series: IFMBE Proceedings Volume: 59 Pages: 223-227 Published: 2017
14. Ignat M.C., Farago P., Hintea S., Roman M.N., Vlad S., „A Single-Character Refreshable Braille Display with FPGA Control", Int. Conf. on Advancements of Medicine and Health Care through Technology; 12th-15th October 2016 Cluj-Napoca, Romania, *IFMBE Proceedings*, Vol. 59 (2017), ISBN 978-3-319-52874-8, pp. 63-66
15. Iancu A., Rafiroiu D., Marc M., "Is Coronary Wedge Pressure a Technique to Identify High-Risk Patients Who May Benefit From Alternative Treatment in Acute Myocardial Infarction? Is this the next step?" *JACC: Cardiovascular Interventions*, vol. 9, no. 1, 2016, pp: 104-105.
16. D'Avenio G., Wang G., Rafiroiu D., De Angelis G., Grigioni M., "PIV and CFD Insight into the Hinge and Near-Hinge Flow Fields of Bileaflet Mechanical Heart Valves ", XIV MEDITERRANEAN CONFERENCE ON MEDICAL AND BIOLOGICAL ENGINEERING AND COMPUTING 2016, Book Series: IFMBE Proceedings Vol. 57 Pge.688-693
17. Vlad S., Demea S., Demea H., Holonec R., "Neural network classifier for glaucoma diagnosis", Proceedings of E-Health and Bioengineering Conference (EHB), 2015, Iasi, Romania, 19-21st November 2015, DOI: 10.1109/EHB.2015.7391596

Significant solutions:
High efficiency solution for medical telemetry ECG. Proved method in pathological PCG analysis.
Efficient mathematical algorithms used in biomedical signal processing.
A data read algoritm based on ZACwire, the protocol for temperature precision sensor TSic 306
Development of portable biomedical instrumentation.
Smart solutions and low cost systems for medical and biomedical signal processing and transmission;
Smart solutions to assess the patient rehabilitation in post-traumatic periods;
High accuracy reconstruction of the 3D geometry of vessels, cavities and cardiovascular devices;
Development of a multiscale CFD-FSI double-valve model of the left ventricle to study the valve-valve interaction;
Experimental and computational study of the hemolytic and cavitation effects of bileaflet mechanical heart valves;
Computational analysis of thrombus absorption efficiency for different commercial catheter designs;
Computational assessment of high frequency electromagnetic (cell phone) field effects on implanted carotid stents;
Products and technologies:
Low consumption battery powered DSP devices for ECG and PCG signal analysis

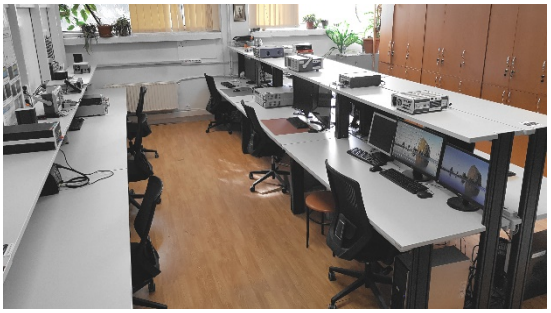
The offer addressed to the economic environment

Research & development	Datronix Computer Ltd., Cluj-Napoca, www.datronix.ro National Institute for Research and Development of Isotopic and Molecular Technologies www.itim-cj.ro Military Emergency Hospital Dr. Constantin Papilian, Cluj-Napoca, www.smucluj.ro County Emergency Hospital Bistrita-Nasaud, http://spital.bistrita.ro/
Consulting	Consulting in the areas of medical signal measurements, medical signal processing and data transmission, medical image processing, FDA regulations of cardiovascular devices.
Training	CFD-FSI analysis, Multiphysics and multiscale modelling, Computational methods for cardiovascular devices design, Computational methods for electromagnetic dosimetry

RESEARCH LABORATORY AND SUSTAINABLE DEVELOPMENT ÎN ELECTRONICS AND POWER ELECTRONICS

Contact details

Name	**Research Laboratory and Sustainable Development in Electronics and Power Electronics**
Acronym	**RLSDEPE**
Logo	RLSDEPE
Site	http://epe.utcluj.ro
Address	Observatorului Str., No. 2, Rooms 9B and 12B, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electrical Engineering** **Electrical Machines and Drives Department**
Telephone	+40 264 202828
Director	Assoc. Prof. Ph.D. Eng. Petre Dorel Teodosescu
Founder	Prof. Ph.D. Eng. Richard Marschalko
e-mail	Petre.Teodosescu@emd.utcluj.ro



Areas of expertise

DC and AC high efficiency converters;
PWM and PFM converters control strategies ;
High power factor and/or power conditioning converters;
Power electronics for high efficiency lighting systems;
High frequency, high power density converters for motor drive and renewable energy.

Team

Assoc. Prof. Ph.D. Eng. Petre-Dorel Teodosescu, Lect. Ph.D. Eng. Mircea Bojan, Lect. Ph.D. Eng. Călin Mărginean, Assist. Eng. Norbert Csaba Szekely, Assist. Eng. Vasile Mihai Suciu, Assist. Eng. Sorin Ionuț Salcu, Eng. Lucian Nicolae Pintilie, Eng. Mihai Adrian Iuoraș, Eng. Alexandru Mădălin Păcuraru.

Representative projects

MICROINV – **"High-power density and high efficiency micro-inverters for renewable energy sources"**; Action: POC-A1-A1.2.3-G-2-15 Knowledge Transfer Partnerships, (2017-2021);
CIA_CLIM - "Smart buildings adaptable to the effects of climate change" - PNIII-P1-1.2 PCCDI 2018, (2018-2020);
IEDPFC – "**Innovative Electronic Device for Power Factor Correction**", PN-II-PT-PCCA-2013-4-0914, (2014-2017);
"Influence of DC-Link capacitor aging on the PWM converters operation", Mobility and Environment: Researches in the fields of motor vehicle industry, energetics and enviroment in teh Middele - and west -Transdanubian Regions of Hungary, by European Union and co-financed by the European Regional Developemend Fund" (2010-2013);
"Research on the Ecological Energy Conversion Methods with the help of PWM AC- to - DC Converters", CNCSIS, (2004-2006).

Significant results

The most representative publications of the past 5 years:

1. Teodosescu, P.D.; Szekely, N.C.; Bojan, M.: - " Flexible System for Practical, Hands-On Power Electronics Teaching", MPS 2019 - International Conference – 8th Edition International Conference on Modern Power Systems, 21-23 May 2019, Cluj-Napoca, Romania, DOI: 10.1109/MPS.2019.8759702; ISBN 978-1-7281-0750-9;
2. M. Chirca, M. Dranca, P. Teodosescu and S. Breban, "Limited-Angle Electromechanical Actuator for Micro Wind Turbines Overspeed Protection," 2019 11th International Symposium on Advanced Topics in Electrical Engineering (ATEE), Bucharest, Romania, 2019, pp. 1-6.
3. V. M. Suciu, S. I. Salcu, L. N. Pintilie, P. D. Teodosescu and Z. Mathe, "Theoretical efficiency analysis of a buck-boost converter for wide voltage range operation," 2018 10th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Iasi, Romania, 2018, pp. 1-4., doi: 10.1109/ECAI.2018.8679063;

4. Szekely, N.C.; Bojan, M.; Salcu, S.I.; Teodosescu, P.D.: - "LED performance analysis under various current waveforms", ECAI 2018 - International Conference – 10th Edition Electronics, Computers and Artificial Intelligence, 28 June -30 June, 2018, Iași, România, DOI: 10.1109/ECAI.2018.8678988; ISBN 978-1-5386-4901-5;
5. Teodosescu Petre Dorel, Szekely Norbert Csaba, Sabau Madalina Sabina and Bojan Mircea, Analysis of a Resonant AC-AC LED Driver, Optoelectronics, Advanced Device Structures, Edited by Sergei Pyshkin, Published: July 12th 2017, ISBN: 978-953-51-3370-4, DOI: 10.5772/65136;
6. Gros, Ioana-Cornelia; Popa, Dan-Cristian; Teodosescu, Petre Dorel; et al., A Survey on Green Energy Harvesting Applications Using Linear Electric Generators Conference: 7th International Conference on Modern Power Systems (MPS) Location: Cluj Napoca, ROMANIA Date: JUN 06-09, 2017;
7. Chirca, Mihai; Oprea, Claudiu; Teodosescu, Petre-Dorel; et al., Optimal Design of a Radial Flux Spoke-Type Interior Rotor Permanent Magnet Generator for Micro-Wind Turbine Applications Conference: International Conference on Applied and Theoretical Electricity (ICATE) Location: Craiova, ROMANIA Date: OCT 06-08, 2016, Book Series: International Conference on Applied and Theoretical Electricity Published: 2016;
8. Tiberiu Rusu, Petre Dorel Teodosescu, Adrian-Cornel Pop, Practical implementation of a half-bridge SRM converter for low power applications The 18th National Conference on Electrical Drives "CNAE 2016", ACTA ELECTROTECHNICA, Volume 57, Number 3-4, 2016, Special Issue, ISSN 2344-5637, pp. 473-477;
9. Petre Teodosescu, Madalina Sabau, Norbert Szekely, Mircea Bojan, Richard Marschalko, Theoretical Analysis of the Commutation Frequency Range for a PWM AC - to -DC Converter with Current Hysteresis Modulation, The 18th National Conference on Electrical Drives "CNAE 2016", ACTA ELECTROTECHNICA, Volume 57, Number 3-4, 2016, Special Issue, ISSN 2344-5637, pp. 490-496;
10. Sabau. M.S, Szekely N.C, Teodosescu PD, "Electronic device for LED lighting Systems", *The official Catalogue of the ~Cadet Inova~ Exhibition, The Scientific Bulletin Addendum*, No.1, 2016, "Nicolae Balcescu" Land Forces Academy Publishing House, pp 133-135;
11. Teodosescu, Petre-Dorel; Bojan, Mircea; Vese, Ioana-Cornelia; et al., RESEARCH CONCERNING UNIFIED ELECTRONIC LIGHTING DEVICES PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE Volume: 16 Issue: 2 Pages: 226-234 Published: APR-JUN 2015;
12. Teodosescu, P. D.; Bojan, M.; Marschalko, R., Resonant LED driver with inherent constant current and power factor correction, ELECTRONICS LETTERS Volume: 50 Issue: 15 Pages: 1087-1088 Published: JUL 17 2014
13. Teodosescu P.D.,Negrea S.T., Bojan M.,Marschalko R.,"Local Grid Power Quality Improvements by the use of a High Power Factor LED Device", *49th International Universities Power Engineering Conference (UPEC*), ClujNapoca, ROMANIA, Sep 02-05, 2014.

Patents:

1. RO131166-B1 – Electro-mechanical actuator with electronic control device, 30 Aug 2018 (Romanian);
2. EP3121952-B1 - Operating method of switched reluctance motor, 05 Dec 2018 (European);
3. RO131169-B1 - Electronic device for led lighting systems, 28 Jun 2019 (Romanian);
4. EP3300462-B1 - Capacitor direct current (DC)-link arrangement, 11 Dec 2019 (European).
5. A201900915 – Patent Application – Interleaved Buck-Boost electronic converter
6. A201900916 – Patent Application – DC Micro-grid and its control method

Significant solutions:

1. Introducing the new concepts of Line Conditioning Strategies - Simple Line Conditioning, Active Line Conditioning, Complex Line Conditioning and Complex Power Factor Corrections – with the help of PWM AC- to - DC Converters.
2. Development and practical implementation of several methods for Active Line Conditioning and Complex Power Factor Corrections strategies.
3. Development and practical implementation of new electronic converters for motor control, renewable energy and LED lighting applications.

The offer addressed to the economic environment

Research & development	RLSDEPE can cover fundamental research and development activities regarding electronics and power electronic domain, thus the mathematical analyses, software simulations, practical implementation and testing for different AC/DC power converters for small to medium power applications. The research activities can cover domains as: Energetics (power conditioning converters, uninterruptible power supplies, renewable energy converters and control strategies), Automotive (main power traction and battery charge converters, auxiliary converters for ventilation, trajectory control, electronic lighting, etc.), Lighting (High Efficiency LED drivers), converters for general motor control applications.
Consulting	The experience of the RLSDEPE members in the field of Electronics and Power Electronics could offer to the private sector technical consulting, documentation and feasibility studies. The practical implementation services are one of the strongest assets regarding RLSDEPE, thus the Laboratory can offer services regarding fundamental and theoretical research, concept studies, simulations, modelling and practical experimentations.
Training	RLSDEPE, trough the experience of his members could coordinate theoretical and/or applicative training services in the field of Electronics, Power Electronics, Energetics Power Electronics Systems, CAD Electronics Circuits Modelling and Simulation, Development, Testing and Technical Services of Electronic Equipment.

CENTER OF APPLIED RESEARCHES IN ELECTRICAL ENGINEERING FOR SUSTAINABLE DEVELOPMENT

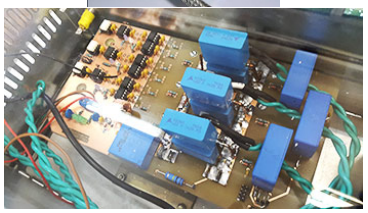
Contact details

Name	**Center of Applied Researches in Electrical Engineering for Sustainable Development**
Acronym	**CCAIEDD**
Logo	
Site	http://memm.utcluj.ro/ccaiedd/en/index.html
Address	2 Observatorului str., 400489 Cluj-Napoca, Romania
Faculty Department	**Faculty of Electrical Engineering** **Electrical Machines and Drives Department**
Telephone	+40 264 401827
Fax	+40 264 593117
Director	Prof. Dr. Eng. Loránd Szabó
e-mail	Lorand.Szabo@emd.utcluj.ro

GreenMot Lab with a testbench for testing electrical machines up to 4 phases, 125kW and 12,000r/min

Permanent magnet synchronous machine of 20kW and 26,000r/min

150V and 200A power converter



Areas of expertise

Design, modeling and optimization of electrical machines & drives for energy efficient applications in industrial, automotive and renewable energy fields
Control of electric and electromechanical systems
Condition monitoring, fault tolerance and diagnosis of electromechanical systems
DSP, microcontroller and FPGA programming
Hardware-in-the-loop (HiL) simulation in hybrid-electric vehicles

Team

Prof. Dr. Loránd Szabó, Prof. Emer. Dr. Ioan-Adrian Viorel, Prof. Emer. Dr. Vasile Iancu, Prof. Dr. Horia Hedeșiu, Prof. Dr. Claudia Marțiș, Assoc. Prof. Dr. Csaba Szász, Assoc. Prof. Dr. Daniel Fodorean, Assoc. Prof. Dr. Dan-Cristian Popa, Assoc. Prof. Dr. Florin Jurca, Assoc. Prof. Dr. Ștefan Breban, Lecturer Dr. Claudiu Oprea, Lecturer Dr. Mircea Ruba. Postdoc researcher: Dr. Áron Popp, Ph.D. students: Florin Pop Pigleșan, Radu Andrei Marțiș, Sorina Ciornei, Andreea-Mădălina Nicorici, Răzvan Înțe, Raul Nemeș, Sorin Iulian Cosman, Claudia Pop, Cristina Moldovan, Adriana Tintelecan, Iulia Văscan.

Representative projects

URBIVEL – Advanced technologies for intelligent urban electric vehicles, project co-financed by the European Regional Development Fund through Competitiveness Operational Program 2014-2020 (2016-2021). Director: Prof. Dr. Claudia Marțiș. https://urbivel.utcluj.ro.
INTERACT – European industrial doctorate on next generation for sustainable automotive electrical actuation, H2020-MSCA-ITN-2017 (2018-2021). Director: Prof. Dr. Claudia Marțiș. https://interact.utcluj.ro.
Electromagnetic modeling, simulation and optimization of induction machines for automotive industry. Beneficiary: Ohio State University (USA). Director: Assoc. Prof. Dr. Dan-Cristian Popa (2018-2019).
Zero airgap induction motor. Beneficiary: Ohio State University (USA). Director: Assoc. Prof. Dr. Dan-Cristian Popa (2018-2019).
PANDA – Powerful Advanced H-Level. Digitalization Architecture for models of electrified vehicles and their components, H2020-LC-GV-2018 (2018-2021). Partner coordinator: Prof. Dr. Claudia Marțiș. https://project-panda.eu.
SWTOMP – Small Wind Turbines Optimization and Market Promotion, ERANet-LAC – Network of the European Union, Latin America and the Caribbean Countries on Joint Innovation and Research Activities, (2017-2019). Partner coordinator: Prof. Dr. Loránd Szabó. https://memm.utcluj.ro/SWTOMP.
SMiLE-EV – Smart Conductive Charging Station, Fixed and MobiLE, for Electric Vehicles, PN III – PCCDI (2018-2021). Partner coordinator: Assoc. Prof. Dr. Daniel Fodorean. http://www.smile-ev.usv.ro.
EXTWIG – Experimental validation of a VAWT with counter-rotating rotors, PN III – PCCDI (2017-2018). Partner coordinator: Assoc. Prof. Dr. Ștefan Breban. http://www.comoti.ro/ro/Proiect_64%20PED.htm.
ESPESA – Strengthening the Research Potential of CAREESD in the Field of Electromechanical Systems and Power Electronics for Sustainable Applications, H2020-TWINN-2015 - Twinning Coordination and support actions

(2016-2018). Director: Prof. Dr. Claudia Marțiș. https://cordis.europa.eu/project/id/692224.
ELIMPUS – Efficient Lightweight Electro-Magnetic Propulsion System for Electric Vehicles, Young Team - TE PNII (2015-2017). Director: Assoc. Prof. Dr. Daniel Fodorean. https://elimpus.utcluj.ro.

Significant results

The most representative publications of the past 5 years:

1. L. Szabó, **A survey on modular variable reluctance generators for small wind turbines**, IEEE Transactions on Industry Applications, vol. 55, no. 3, pp. 2548-2557, 2019.
2. C.V. Pop, D. Fodorean, C. Husar, C. Irimia, **Structural behavior evaluation of an in-wheel motor based on numerical and experimental approach**, Electrical Engineering, 2019, DOI: 10.1007/s00202-019-00774-0.
3. R.O. Nemeș, S.M. Ciornei, M. Ruba, C. Marțis, **Real-time simulation of scaled propulsion unit for light electric vehicles**, Electrical Engineering, 2019, DOI: 10.1007/s00202-019-00773-1.
4. Ș.D. Cîrstea, C.S. Marțiș, A. Cîrstea, A. Constantinescu-Dobra, M.T. Fülöp, **Current situation and future perspectives of the Romanian renewable energy**, Energies, vol. 11, no. 12, p. 3289, 2018.
5. S. Ciceo, C.T. Faria, J. Gyselinck, C. Marțiș, **Multi-attribute, system-level design process for automotive powertrain electric drives: an integrated approach**, SAE International Journal of Alternative Powertrains, vol. 7, no. 2, pp. 117-128, 2018.
6. M. Ruba, F. Jurca, L. Czumbil, D.D. Micu, C. Marțiș, A. Polycarpou, et al., **Synchronous reluctance machine geometry optimisation through a genetic algorithm based technique**, IET Electric Power Applications, vol. 12, no. 3, pp. 431-438, 2017.
7. D. Fodorean, L. Idoumghar, M. Brévilliers, P. Minciunescu, C. Irimia, **Hybrid differential evolution algorithm employed for the optimum design of a high-speed PMSM used for EV propulsion**, IEEE Transactions on Industrial Electronics, vol. 64, no. 12, pp. 9824-9833, 2017.
8. A. Dziechciarz, C. Marțiș, **Simplified model of synchronous reluctance machine with optimized flux barriers**, Electrical Engineering, vol. 99, no. 4, pp. 1207-1216, 2017.
9. P. Dúbravka, P. Rafajdus, P. Makyš, L. Szabó, **Control of switched reluctance motor by current profiling under normal and open phase operating condition**, IET Electric Power Applications, vol. 11, no. 4, pp. 548 -556, 2017.
10. A. Câmpeanu, R. Munteanu, V. Iancu, **About dynamic stability of high power synchronous machine. A review**, Revue Roumaine des Sciences Techniques - Serie Électrotechnique et Énergétique vol. 62, no. 1, pp. 8-13, 2017.
11. D. Fodorean, M. Sarrazin, C.S. Marţiş, J. Anthonis, H. Van der Auweraer, **Electromagnetic and structural analysis for a surface mounted PMSM used for light-EV**, IEEE Transactions on Industry Applications, vol. 52, no. 4 (July-August 2016), pp. 2892-2899, 2016.
12. L. Frosini, C. Harlişca, L. Szabó, **Induction machine bearing faults detection by means of statistical processing of the stray flux measurement**, IEEE Transactions on Industrial Electronics, vol. 62, no. 3, pp. 1846-1854, 2015.
13. M. Diko, P. Rafajdus, P. Makys, P. Dubravka, L. Szabó, M. Ruba, **A novel concept of short-flux path switched reluctance motor for electrical vehicles**, Advances in Electrical and Electronic Engineering, vol. 13, no. 3, pp. 206-211, 2015.

Significant solutions:
Prototypes and laboratory models of special electrical machines; static converters; fault detection and fault tolerant systems; electrical machines MiL and HiL testing and evaluation procedures, etc.

Products and technologies:
Microcontroller based boards for motor control, energy management and position detection based on resolvers, DSP development boards for motor control and diverse applications, FPGA-based development boards for motor control and divers applications, energy management: on board on light electric vehicles and hybrid power sources, HiL testing platforms for electric vehicle propulsion and auxiliaries systems.

Patents:
Ș Breban, P.-D. Teodosescu, A.-V. Neag, M. Chirca, **Electronically controlled electromagnetic actuator**, patent no. RO131166/2018.
Ș Breban, M. Dranca, I. Malael, **Airborne wind power generation system**, patent proposal no. A00673/2019.

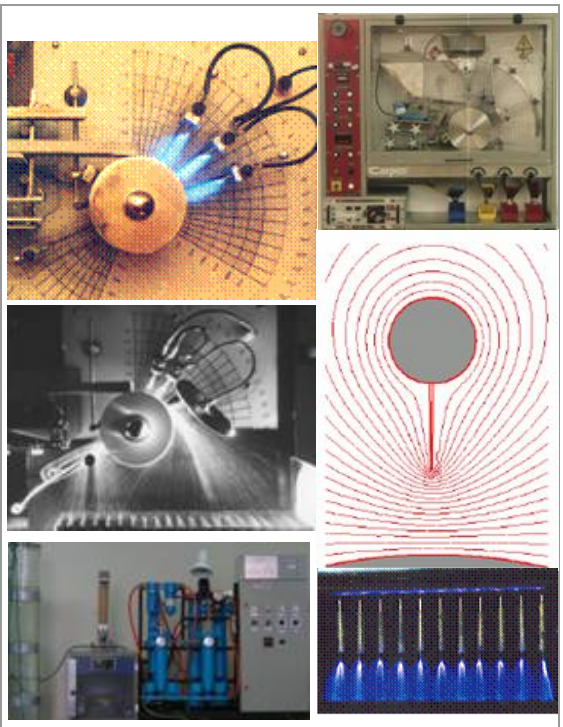
The offer addressed to the economic environment

Research & development	Electrical machines design and optimization Electrical drives and control based on microcontrollers, DSPs and FPGA devices Electromechanical systems for smart, green and integrated transportation Secure, clean and efficient renewable energy generation and storage systems Energy management on hybrid electrical power sources Offering advanced technical solutions for industrial clients in all our research fields. Seeking for research & development partners (both from industry and academia) in all the fields of expertise of the center.
Consulting	Offering consultancy services for companies in all the fields of expertise of the center. Offering applied engineering services for companies in all our fields of expertise.
Training	Offering training for under and post graduate students, Ph.D. students, engineers working in research and industry in all the fields of expertise of the Center.

HIGH INTENSITY ELECTRIC FIELDS LABORATORY

Contact details

Name	**High Intensity Electric Fields Laboratory**
Acronym	**LCEI**
Logo	ELECTRICE CÂMPURI INTENSE LABORATORUL
Site	http://users.utcluj.ro/~lcei/index_ro.html
Address	Headquarters: 26-28 G. Baritiu St., room 365 Research lab.: 103-105 Bd Muncii, room C201
Faculty Department	**Faculty of Electrical Engineering** **Electrotechnics and Measurements Department**
Telephone	+40 264 401429, +40 264 401678
Fax	+40 264 592055
Director	Prof. Dr. Eng. Adrian Samuila
e-mail	Adrian.Samuila@ethm.utcluj.ro



Areas of expertise

Equipment and technologies for electrostatic separation
Modelling of electrostatic processes
Ozonizing technologies for liquids
Biological effects of high intensity electric fields.
Consulting and technology transfer in these fields

Team

Prof. Adrian Samuila, Prof. Roman Morar, Prof. Alexandru Iuga, Prof. Lucien Dascalescu (Univ. Poitiers), Prof. Vasile Neamtu, Assoc. Prof. Ilie Suarasan, Assist. Prof. Sorin Budu, dr. Laur Calin, dr. Mihai Bilici, ing. Andrei Catinean.

Representative projects

"Program for promoting of electroseparation and ozonizing modern electrostatic technologies, training of human resources for research and infrastructure consolidation of the High-Intensity Electric Fields Laboratory", Major Grant, World Banc, Romanian Government, (2000-2002)
"Experimental researches on ozone influence in rehabilitation of wastewater from public sewerage networks", Grant CNCSIS, (2001-2003)
"Researches on developing electrostatic separation technology of muscovite", Grant CNCSIS, (2005-2006)
"Optimization of innovative methods of electrostatic separation applied in the industry of recycling materials", (2005-2006)
"Quality Improvement of quartz sands by electrostatic separation in high intensity electric field", Grant CNCSIS, (2005-2007)
"Fluidized bed tribocharging of multi-component mixtures of recyclable plastic materials", Grant CNCSIS, (2005-2007)
"Recovery technologies of metals and plastics from wastes of informatics and telecommunications equipment", Proiect CEEX, (2005-2007)
"Electrostatic procedures for the recovery of copper a"nd plastic materials from micronized waste" Proiect BRANCUSI 88 BM (2017-2018)
"**Optimized technologies with reduced impact on the environment for the advanced recovery of waste materials IT equipment"** Proiect 84PCCDI - 01/03/2018 TRADE-IT (2018 – 2020)

Significant results

The most representative publications of the past 5 years:

1. Catinean A, Dascalescu L, Lungu M, Dumitran L, Samuila A. *Improving the recovery of copper from electric cable waste derived from automotive industry by corona-electrostatic separation*. Particulate Science and Technology, vol. 39. Issue 4,2021 DOI: 10.1080/02726351.2020.1756545 ISSN:0272-6351.
2. L. Calin, A. Catinean, M. Bilici, A. Samuila, L. Dascalescu. *Electrostatic separation of plastic mixture ABS/HIPS and ABS-PC/HIPS from IT equipment using fluidized bed*. Particulate Science and Technology, Published online 13 May 2021, http://doi.org/10.1080/02726351.2021.1922560 ISSN: 0272-6351.
3. L. Calin, A. Catinean, M. Bilici, A. Samuila. *A corona-electrostatic technology for zinc and brass recovery from the coarse fraction of the recycling process of spent alkaline and zinc-carbon batteries*. Journal of Cleaner Production, Volume 278, 1 January 2021, 123477. ISSN 0959/6526.
4. M. Bilici, A. Catinean, L. Călin, A. Samuila. *The Effect of Charged Granules Agglomerations on the Electric Field Distribution of a Tribo-aero-electrostatic Separator.* 11th International Symposium on Advanced Topics in Electrical Engineering (ATEE). Bucharest, Romania, 2019, pp. 1-6, DOI: 10.1109/ATEE.2019.8724939
5. Adrian Samuila, Lucian Dascalescu, Laur Calin, Mihai Bilici, Andrei Catinean. *Recent Researche in Electrostatic Separation Technologies for the Recycling of Waste Electric and Electronic Equipment***.** TIM 19 Physics Conference, 29-31 May, Timisoara, Romania, pp. 1-10. Published in AIP Conference Proceedings, Vol. 2218. American Institute of Physics Inc. https://doi.org/10.1063/5.0001074
6. L. Calin, M. Bilici, A. Samuila. *Improvement of the Fluidized Bed Tribocharging Device for Electrostatic Separation of Plastics from Electronic Medical Waste*. 6th International Conference on Advancements of Medicine and Health Care through Technology; 17–20 October 2018, Cluj-Napoca, Romania. IFMBE Proceedings, volume 71, pp 341-346.
7. Iuga, A., Samuila, A., Morar, R., Bilici, M., Dascalescu, L. *Tribocharging techniques for the electrostatic separation of granular plastics from waste electric and electronic equipment*. Particulate Science and Technology , Volume 34 (1), 2016, pp. 45-54. ISSN:0272-6351.
8. Buda, G., Samuila, A., Bilici, M., Atroune, S., Dascalescu, L. *Set Point Identification and Robustness Testing of a Triboelectrostatic Separation Process*. IEEE Transactions on Industry Application, Vol. 51(2), 2015, pp. 1153-1160.
9. Adrian Samuila, Mihai Bilici, Lucian Dascalescu *Recycling of PS/PVC Granular Waste Using a Fluidized-Bed Two-Insulated-Rolls-Type Tribo-Aero-Electrostatic Separator*. The 9th International Symposium on Advanced Topics in Electrical Engineering, Bucarest, 2015, pp. 254-259
10. G. Buda, A. Samuila, S. Atroune, M. Bilici, L. Dascalescu, "Set point identification of a tribocharging process for mixed granular solids", in Journal of electrostatics, vol.7, no. 3, 2013, pp. 407-412
11. Al Hajjar Nadim, Pitu Flaviu, Nicodim FiŃ, Pitu Florina, Popa Calin, Suarăsan Ilie, Emoke Pall. *Effect of aqueous ozone solution on pancreatic cells.* Journal of Cell and Animal Biology Vol. 6(2), pp. 25-28, 30 January, 2012.
12. Al Hajjar Nadim, Flaviu Pitu, Emoke Pall, Florina Pitu, Ilie Suarasan, Calin Popa and Nicodim Fiţa. *In vitro effect of ozonated saline on microorganisms involved in pancreatic and peripancreatic necrosis infection in severe acute pancreatitis*. African Journal of Microbiology Research Vol. 6(3), pp. 611-616, 23 January, 2012
13. A. Iuga, A. Samuila, V. Neamtu, R. Morar, R. Beleca, S. Das, L. Dascalescu, "*Removal of Metallic Particles from Acrylonitrile Butadiene Styrene Wastes Using Electrostatic Separation Methods*", in IEEE Transactions on Industry Application, vol. 47, no. 1, 2011, pp. 322-330
14. L. Dascalescu, M. Bilici, C. Dragan, A. Samuila, Y. Ramdani, A. Tilmatine, „*Robust Design and Capability Evaluation of a Tribo-aerodynamic Charging Process for Fine Particle*" in IEEE Transactions on Industry Application, vol. 47, no. 3, 2011, pp. 1086-1092

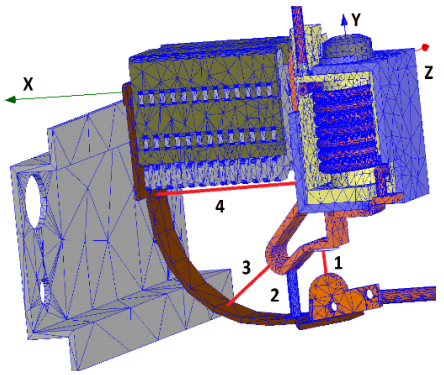
The offer addressed to the economic environment

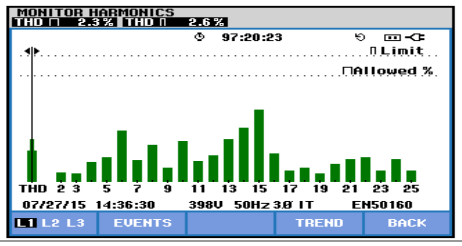
Research & development	HIEFL is equipped with installations for electrostatic separations of granular materials, unique on a national scale and competitive on an international scale: ELSEP and ILES-1 roll carrier corona-electrostatic separators, SEP-1 plate type electrostatic separator, ILES-2 and TESS free fall separators, insulated rolls tribo-aero-electrostatic separator, free-fall corona electgrostatic separator, ELSMOD roll carrier pilot separator. The list of the research equipment of HIEFL includes: regulated high-voltage supplies (0-100)kV, electromagnetic vibratory feeders for granular materials, tribocharging devices, experimental installation for liquids treatment (5 grams ozone/hour), Keithley digital electrometer, (30-100)kV resistive dividers, electrostatic kilo-voltmeter**,** laboratory ozone-meter, RETSCH SM300 cutting mill, TestPoint software, Modde -user-friendly software for the design of experiments, Superficial Charge Simulation Program.
Consulting & Training	Fundamental and applied research by projects, grants, programs in the domains: equipment and technologies for electrostatic separation, modelling of electrostatic processes, ozonizing technologies for liquids, biological effects of electric fields. Master and Doctoral studies in Electrostatics. Research and Development of experimental devices and industrial equipment using high-intensity electric fields. Promotion of new technologies in high intensity electric fields and orientation of research to medium and long term needs of the society. Scientific cooperation & integration in European Research Area. Quality in university education and scientific research.

POWER QUALITY AND ENERGY EFFICIENCY

Contact details

Name	**Power Quality and Energy Efficiency**
Acronym	**CEE**
Logo	
Site	http://cee.cunbm.utcluj.ro/cee/
ERRIS	https://erris.gov.ro/Power-Quality-and-Energy-Eff
Address	62/A Dr. V. Babes Str., 430083, Baia Mare, Romania
Faculty Department	**Faculty of Engineering** **Electrical, Electronic and Computer Engineering Department**
Telephone	+40 264 202 975
Fax	+40 262 276 153
Director	Assoc. Prof. Dr. Eng. Liviu Neamt
e-mail	liviu.neamt@ieec.utcluj.ro





Areas of expertise

Modern computer aided design, analysis and optimization of electrical equipment, based on Finite Element Method.
Energy efficiency through power circulation improvement, enhanced technologies and renewable energies integration;
Photovoltaic potential estimation;
Monitoring, analysis and improvement of power quality;
Measurement, testing and diagnosis in electrical installations;
Measurement of non-ionising electromagnetic radiation in order to assess electromagnetic fields for the purpose of comparison against limits for human exposure

Team

Assoc. Prof. Dr. Eng. Liviu Neamt, Assoc. Prof. Dr. Eng. Olivian Chiver, Assoc. Prof. Dr. Eng. Mircea Horgos, Prof. Dr. Eng. Liviu Emil Petrean, Assoc. Prof. Dr. Eng. Zoltan Erdei, Assist. Prof. Dr. Eng. Eleonora Pop, Assist. Prof. Dr. Eng. Mihaela Stet, Assist. Prof. Dr. Eng. Cristian Barz.

Representative projects

"Assisted technology for electrical installation testing" - PN-III-P2-2.1-CI-2018-1296, 2018
"**Assisted technology for designing, building and verifying earthing installations**" - PN-III-P2-2.1-CI-2018-1293, 2018
"Electromagnetic field simulation of capacitive touch sensors". Electrolux, Italy, 2015;
"Investigation of the circumstances and causes of the LV electrical equipment failure due to HV commutation at CEFD Solaris 56 MWp Ciuperceni", Bester Generacion, Spain, 2015;

Significant results

The most representative publications of the past 5 years:

1. L. Neamt and O. Chiver, *A Simple Design Method of Unequal Spacing Arrangement for Substation Grounding Grid*, in IEEE Access, doi: 10.1109/ACCESS.2021.3119941.
2. Neamt, Liviu; Neamt, Alina; Chiver, Olivian, *Improved Procedure for Earth Fault Loop Impedance Measurement in TN Low-Voltage Network*, Energies, Volume: 14, Issue: 1, Article Number: 205, 2021.
3. Chiver, Olivian; Neamt, Liviu; Cristian, Barz; et al; *Study on the End Winding Inductance of Three-Phase Windings in Two Layers*, Tehnički vjesnik 26 (5), 1510-1514, 2019.
4. A. V. Hotea, R. Adrian Tirnovan and L. Neamt, *The Effects of Short Circuits at Medium Voltage Transformers*, 54th International Universities Power Engineering Conference (UPEC), Bucharest, Romania, pp. 1-3, 2019.
5. L. Neamt, H. Balan, O. Chiver and A. Hotea, *Considerations about Fault Loop Impedance Measurement in TN Low-Voltage Network*, 8th International Conference on Modern Power Systems (MPS), Cluj Napoca, Romania, pp. 1-4, 2019.
6. L. Neamt, H. Balan, O. Chiver and A. Hotea, *Considerations about Substation Grounding System Design*, 8th International Conference on Modern Power Systems (MPS), Cluj Napoca, Romania, pp. 1-4, 2019.
7. Neamt, Liviu; Petrean, Liviu; Chiver, Olivian; et al; *Some Considerations about Overvoltages During and After the Disconnection of a Photovoltaic Park*, 24th IEEE International Symposium on Design and Technology in Electronic Packaging (SIITME, Iasi, 239-242, 2018.

8. Chiver, Olivian; Neamt, Liviu; Cristian, Barz; et al., *Study on the Autonomous Asynchronous Generator*, 2018 International Conference and Exposition on Electrical and Power Engineering, EPE Iasi, 863-866, 2018.
9. Chiver, Olivian; Neamt, Liviu; Matei, Oliviu; et al., *Utilization of Finite Elements Programs and Matlab Simulink in the Study of a Special Electrical Motor*, International Journal of Advanced Computer Science and Applications, 8(4), 317-323, 2017,
10. Neamt, Liviu; Matei, Oliviu; Chiver, Olivian, *Finite Element Method Combined with Neural Networks for Power System Grounding Investigation*, International Journal of Advanced Computer Science and Applications, 8(2), 187-192, 2017,
11. Chiver, O.; Neamt, L.; Pop, E.; et al., *Single-phase PM synchronous motor simulation with Matlab/Simulink,* International Conference on Applied Sciences (ICAS2016), Book Series: IOP Conference Series-Materials Science and Engineering, Volume: 163, 2017.
12. Neamt, Liviu; Chiver, Olivian; Erdei, Zoltan; et al, *Considerations about Medium Voltage SF6 Switch Disconnector Framework Design based on 3D Electrostatic FEA,* IEEE 16th International Conference on Environment and Electrical Engineering (EEEIC), Florence, 2016.

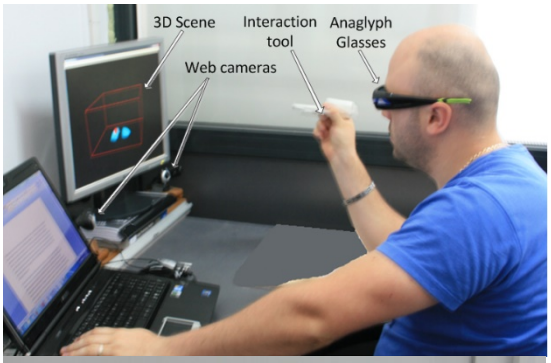
The offer addressed to the economic environment

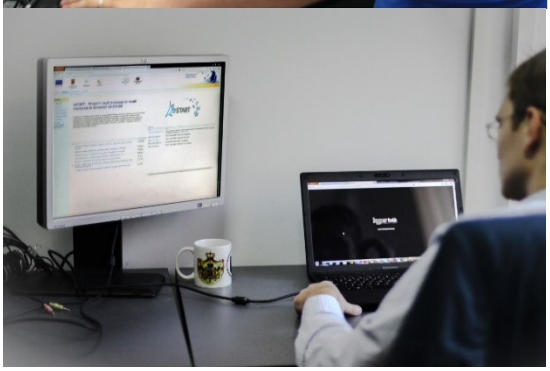
Research & development	Electrical equipment analysis and optimization, based on Finite Element Method; Energy efficiency and better power quality trough power circulation improvement, based on computer assisted simulation; Development of enhanced technologies in energy conversion; Development of new testing and diagnosis methods in electrical installations.
Consulting	Audit, energy efficiency and power quality; Renewable sources potential estimation for feasibility studies; Renewable energy conversion systems integration; Measurement, testing and diagnosis in electrical installations, data processing and results interpreting. Measurement of non-ionising electromagnetic radiation in order to assess electromagnetic fields for the purpose of comparison against limits for human exposure.
Training	Romanian Energy Regulatory Authority certified courses for electricians, project supervising, experts, Romanian Energy Regulatory Authority certified courses for: energy auditors and managers; Measurement, testing and diagnosis in electrical installations using modern equipment and techniques; Renewable energies integration. Energy efficiency and power quality at consumers.

MULTIMEDIA TECHNOLOGIES AND TELECOMMUNICATIONS RESEARCH CENTRE

Contact details

Name	**Multimedia Technologies and Telecommunications Research Centre**
Acronym	**CTMTc**
Logo	
Site	http://ctmtc.utcluj.ro
Address	15 C-tin Daicoviciu street, room 431, 400020, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunication and Information Technology Communications Department**
Telephone	+40 264 401317
Fax	+40 264 401317
Director	Prof. Dr. Eng. Aurel VLAICU
e-mail	Aurel.Vlaicu@com.utcluj.ro





Areas of expertise

Main Field: Information and communications technologies
Key words: e-learning, e-health, e-business, e-government, e-citizen, e-content, digital television HD / 3D, new Media, web services, multimedia databases, 3D video coding & compression, collaborative cloud, artificial intelligence, cognitive systems, trainable systems, intelligent interfaces, multimodal analysis and integration, image processing and analysis, artificial vision.

Team

Prof. Dr. Eng. Aurel Vlaicu, Assoc. Prof. Dr. Eng. Bogdan Orza, Assist. Dr. Eng. Șerban Meza, PhD. Stud. Aurelia Ciupe, PhD Stud. Alexandru Popa, Prof. Dr. Eng. Mircea Giurgiu, Dr. Eng. Adriana Stan, Assoc. Prof. Dr. Eng. Mihaela Gordan, Assist. Dr. Eng. Camelia Florea, Assist. Dr. Eng. Mihaela Caslariu, Assoc. Prof. Dr. Eng. Zsolt Polgar, Prof. Dr. Eng. Vasile Bota, Assist. Dr. Eng. Mihaly Varga, Prof. Dr. Eng. Virgil Dobrotă, Assoc. Prof. Dr. Eng. Daniel Zinca, Assist. Dr. Eng. Bogdan Rus, Assist. Dr. Eng. Tudor Blaga

Representative projects

VINIVITIS – "Complex, Integrated System for the Technological Optimisation and Superior Valorisation of Vineyard Sub-products", PCCDI 2018 (2018-2020)
DIONASYS - "Declarative and Interoperable Overlay Netowork. Applications to Systems of Systems", CHIST-ERA (2015-2017)
UCONNECT - " Implementation of Ubiquitous Connectivity for Public Transport, FP7 project, 2012-2014.
4WARD – "Architecture and Design for the Future Internet", FP7-ICT-2007-1 No. 216041, 2008-2010
Wi-QoST: "Traffic and QoS Management in Wireless Multimedia Networks", 2004-2008
CODIV " Enhanced Wireless Communication Systems Employing COoperative DIVersity", FP7, 2008-2010.
COST IC 1004 "Cooperative Radio Communications for Green Smart Environments"
COST 2100 "Pervasive Mobile & Ambient Wireless Communications", 2007-2010;
Simple4All – "Speech synthesis that improves through adaptive learning" FP7 project, (2011-2014), www.simple4all.org,
Sound2Sense – "Making sense of speech sounds" ,FP6 project (2007-2011), www.sound2sense.eu,
EU eContentPlus - "KeyToNature" (2008-2010), www.keytonature.eu
EU eTEN "EUROWEX – Online platform using digital signature for the management of university activities" (2006-2008), www.eurowex.org
"**Image Processing, Information Engineering & Interdisciplinary Knowledge Exchange**", CEEPUS Network CII-AT-0042-05-0910,
Text2Speech – „Development of software services for text to speech synthesis in Romanian language" PNII INOVARE (2008-2010),
COMODICI –„ Sistem de Control şi Monitorizare la Distanţă a Clădirilor Inteligente", CEEX project (2006-2008)
SIMIMED – „Sistem integrat de management a informaţiilor medicale utilizând standardul HL7", PNII project (2007-2010)
INVITE – „Platformă Inteligentă Colaborativă pentru Dezvoltarea şi Susţinerea Mecanismelor Intreprinderilor

Virtuale", PNII project – 12119 (2008-2011)

Significant results

The most representative publications of the past 5 years:

1. Meza, Radu Mihai; Meza, Serban Nicolae, A Triadic Formal Concept Analysis Approach to Analyzing Online Hate Speech in Facebook Comments BRAIN-BROAD RESEARCH IN ARTIFICIAL INTELLIGENCE AND NEUROSCIENCE Volume: 10 Issue: 1 Pages: 73-81 Published: JAN-FEB 2019
2. Diop, Abdou Khadre; Meza, Serban; Gordan, Mihaela; et al.,LDA Based Classification of Video Surveillance Sequences Using Motion Information 20TH INTERNATIONAL CONFERENCE ON ADVANCED COMMUNICATION TECHNOLOGY (ICACT) Book Series: International Conference on Advanced Communication Technology Pages: 499-502 Published: 2018
3. L. Cremene, N. Gasko, M. Cremene, M. Suciu, A. Vlaicu, and D. Dumitrescu, "Scarce-resource capacity sharing in cognitive radio environments: a new game theoretical model," Telecommunication Systems, vol. 66, no. 2, pp. 331-342, Oct 2017.
4. Gordan, Mihaela; Meza, Serban; Cislariu, Mihaela; et al., A Fuzzy Logic Approach for the Fast Approximate Computation of Image Transforms from Block JPEG DCT Coefficients PROCEEDING OF 2016 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR) Book Series: IEEE International Conference on Automation Quality and Testing Robotics Pages: 359-364 Published: 2016
5. Ciupe, Aurelia; Florea, Camelia; Orza, Bogdan; et al., A Bag of Words Model for Improving Automatic Stress Classification PROCEEDINGS OF THE SECOND INTERNATIONAL AFRO-EUROPEAN CONFERENCE FOR INDUSTRIAL ADVANCEMENT (AECIA 2015) Book Series: Advances in Intelligent Systems and Computing Volume: 427 Pages: 339-349 Published: 2016
6. Ciupe, Aurelia; Orza, Bogdan; Florea, Camelia; et al., Skill-Oriented Priority Scheduling for Solving the Resource Constrained Project Scheduling Problem 2015 IEEE 11TH INTERNATIONAL CONFERENCE ON INTELLIGENT COMPUTER COMMUNICATION AND PROCESSING (ICCP) Book Series: IEEE International Conference on Intelligent Computer Communication and Processing ICCP Pages: 85-92 Published: 2015
7. Ciupe, A.; Meza, S.; Vlaicu, A., DidaTec LMS as a Framework for Task Assignment Through Blended Learning Techniques International Conference on Social Media in Academia - Research and Teaching (SMART) Timisoara, ROMANIA SEP 18-21, 2014 SMART 2014 - SOCIAL MEDIA IN ACADEMIA: RESEARCH AND TEACHING Pages: 407-415 Published: 2015
8. Florea,Camelia, Gordan, Mihaela, Vlaicu, Aurel,et al., "Computationally Efficient Formulation of Sparse Color Image Recovery in the JPEG Compressed Domain", *Journal Of Mathematical Imaging And Vision*, Vol.49, Issue:1, Pp. 173-190, 2014
9. Moldovan, Roxana, Orza, Bogdan, Vlaicu Aurel, et al., "Advanced Human-Computer Interaction in External Resource Annotation", *IEEE 19th International Conference on Automation, Quality and Testing, Robotics*, Cluj Napoca, Romania,May 22-24, 2014
10. Z. I. Kiss, Z. A. Polgar, M. Giurgiu, and V. Dobrota, "Network coding based resource efficient congestion control for video streaming", *Telecommunication Systems*, vol. 55, pp. 499-512, Apr 2014.
11. Danciu, Marius, Gordan Mihaela, Florea Camelia, et al., "A Hybrid 3D Learning-and-Interaction-based Segmentation Approach Applied on CT Liver Volumes", *Radioengineering*, Vol.22, Issue 1,Special Issue: SI, Pp.100-113, Apr 2013

Products

www.didatec.ro – Learning content management system based on Microsoft technologies
www.e-start.ro – collaborative tool based on Moodle and Adobe Technologies
www.simac.utcluj.ro - SIMAC – sistem integrat de evaluare a activitatilor didactice, de cercetare si manageriale

The offer addressed to the economic environment

Research & development	text to speech synthesis, automatic speech recognition, Interactive Voice Response Systems, collaborative cloud systems for project management, data and network security, unified communication solutions, digital transmission systems: evaluation, design and optimization, Computational intelligence based image processing and analysis systems, color image enhancement and restoration for cultural heritage applications, 3D perception using stereoscopic techniques, Integrated platforms and services for innovative applications in eHealth, eGovernment, eBusiness, eMedia, eLearning and eLiving,
Consulting	Multimedia applications in the context of the mobile social web, cloud computing Education management and the use of IT&C for teaching in different blended-learning or e-learning scenarios: virtual collaboration tools, seroius games, on-line social learning. Integrated platforms and electronic services for innovative applications in eHealth, eGovernment, eBusiness, eMedia, eLearning and eLiving.
Training	Audio-video systems engineering, video signal editing and processing, Complex aquistion and processing of visual information for augmented 3D reality, systems and application for processing / editing / rendering 3D video. Bi-modal (audio & video) and multimodal methods for image and video analysis

SPEECH PROCESSING RESEARCH GROUP

Contact details

Name	**Speech Processing Research Group**
Acronym	**SPEECH**
Logo	
Site	http://speech.utcluj.ro
Address	26 Baritiu Str., 400027 Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technology, Telecommunications Department.**
Telephone	+40 264 202452
Fax	+40 264 591689
Director	Prof. Dr. Eng. Mircea.Giurgiu
e-mail	Mircea.Giurgiu@com.utcluj.ro

Areas of expertise

Speech Processing:
- Automatic Speech Recognition (ASR): Deep Neural Networks (DNN) architectures (DeepSpeech, Transformer);
- Text to Speech Synthesis (TTS): systems based on Tacotron2, DCTTS, and FastPitch DNN architectures;
- Speaker diarization, Emotion and speaking style automatic recognition;
- Speaker anonymization to ensure privacy and security;
- Neural network-based speech vocoders;
- Secure authentication using voice, Interactive Voice Response Systems.

Text Processing:
- Sentiment analysis using dimensional and categorical models;
- Unsupervised sentence polarity prediction;
- Natural Language Processing using machine learning techniques;

Team

Prof. Dr. Eng. Mircea Giurgiu, Sl.dr. Eng. Adriana Stan.
External collaborators: drd. Maria Nutu, drd. Beata Lorincz.

Representative projects

ReTeRom – "Resources and technologies for developing human-machine interfaces in Romanian", PCCDI 2018 – 2020, http://speech.utcluj.ro/sintero
SWARA – "Mobile System for Rehabilitative Vocal Assistance of Surgical Aphonia" PN-II-PCCA, 2014-2017, http://speech.utcluj.ro/swara
Simple4All – "Speech synthesis that improves through adaptive learning" (EC-FP7, 2011-2014), http://simple4all.org
Sound2Sense – "Making sense of speech sounds" (EC-FP6, 2007-2011), http://www.sound2sense.eu
Text2Speech – "Development of software services for text to speech synthesis in Romanian language" (PN II INOVARE, 2008-2010);.
KeyToNature – (EC - eContent Plus, 2008-2010), http://www.key2nature.eu
EUROWEX – "Online platform using digital signature for the management of university activities" (EC – eTEN Trans European e-Services in the Public Interest, 2006-2008), http://www.eurowex.org
Pool2Business – "Project Organisation Online" (EC–EACEA-LLP, 2008-2010), http://www.pool2business.eu/

Significant results

The most representative publications of the past 5 years:

1. A. Stan, B. Lorincz, M. Nutu, M. Giurgiu, "The MARA Corpus: Expressivity in End-to-end TTS Systems using Synthesised Speech Data", The 11th Conf. on SPED 2021, Bucharest, 13-15 Oct. 2021.
2. B. Lorincz, A. Stan, M. Giurgiu, "An objective evaluation of the effects of recording conditions and speaker characteristics in multi-speaker deep neural speech synthesis", Procedia Computer Sciences, Vol. 192, pp. 756-765, 2021, Elsevier.
3. B. Lorincz, A. Stan, M. Giurgiu, "Speaker verification-derived loss and data augmentation for DNN-based multispeaker speech synthesis", Proc of EUSIPCO 2021.
4. Beata Lorincz, Maria Nutu, Adriana Stan, "Romanian Part of Speech Tagging using LSTM Networks", In Proceedings of the IEEE 15th International Conference on Intelligent Computer Communication and Processing, Cluj-Napoca, Romania, 2019.
5. Maria Nutu, Beata Lorincz, Adriana Stan,"Deep Learning for Automatic Diacritics Restoration in Romanian", In Proceedings of the IEEE 15th International Conference on Intelligent Computer Communication and Processing, Cluj-Napoca, Romania, 2019.
6. David A. Braude, Matthew P. Aylett, Caoimhin Laoide-Kemp, Simone Ashby, Kristen M. Scott, Brian O Raghallaigh, Anna Braudo, Alex Brouwer, Adriana Stan,"All Together Now: The Living Audio Dataset", In Proceedings of Interspeech, Graz, Austria, 2019
7. Adriana Stan, "Input Encoding for Sequence-to-Sequence Learning of Romanian Grapheme-to-Phoneme Conversion", In Proceedings of the 10th IEEE International Conference on Speech Technology and Human-Computer Dialogue (SpeD), Timisoara, Romania, 2019.
8. Stan, Adriana; Dinescu, Florina; Tiple, Cristina; et al., The SWARA Speech Corpus: A Large Parallel Romanian Read Speech Dataset International Conference on Speech Technology and Human-Computer Dialogue (SpeD), published 2017
9. Stan, Adriana; Valentini-Botinhao, Cassia; Orza, Bogdan; et al., BLIND SPEECH SEGMENTATION USING SPECTROGRAM IMAGE-BASED FEATURES AND MEL CEPSTRAL COEFFICIENTS 2016 IEEE WORKSHOP ON SPOKEN LANGUAGE TECHNOLOGY (SLT 2016) Pages: 597-602 Published: 2016
10. Moldovan, Alexandru; Stan, Adriana; Giurgiu, Mircea, Improving Sentence-level Alignment of Speech with Imperfect Transcripts using Utterance Concatenation and VAD 2016 IEEE 12TH INTERNATIONAL CONFERENCE ON INTELLIGENT COMPUTER COMMUNICATION AND PROCESSING (ICCP) Book Series: IEEE International Conference on Intelligent Computer Communication and Processing ICCP Pages: 171-174 Published: 2016
11. Adriana Stan, Yoshitaka Mamiya, Junichi Yamagishi, Peter Bell, Oliver Watts, Rob Clark, Simon King, "ALISA: “An automatic lightly supervised speech segmentation and alignment tool", In *Computer Speech and Language*, vol. 35, pp. 116-133, 2016

Significant solutions:

Voice cloning in TTS using small amount of speech data, Automatic alignment of speech and text data, Improve the speech synthesis by improved speaker similarity, Accent prediction in text using only speech data, Text processing using Finite State Transducers, Statistical language modeling for speech recognition and text to speech synthesis, Blind speech denoising and dereverberation, Automatic speech segmentation at syllable level, Unsupervised and language independent syllabification using statistical methods, Broadcast news speaker diarization and speech music discrimination, Emotion and speaking style recognition from audiobook data; Sentiment polarity prediction using categorigal and dimensional models, Polarity prediction using Vector Space Models,

Products and technologies:

1. RONNA – ROmanian Neural Network Api for Speech Synthesis (http://speech.utcluj.ro/ronna)
2. ALISA - A lightly supervised speech segmentation and alignment tool;
3. TUNDRA - A corpus of 14 European languages collected from audiobooks;
4. NORMA - Statistical machine translation-based text NORMAlization tool;
5. DEXTER - Speaker recognition and diarization in audio-video talk shows;
6. AUDIOOR - AUDIO Online Repository, a web based repository of audio and text resources;
7. DeREVERB - Blind speech enhancement and DeREVERBeration tool;
8. SENTIMENT - Sentence polarity predictor for SENTIMENT analysis;
9. TextPREDICT - Fast Text input PREDICTionon mobile devices.

The offer addressed to the economic environment

Research & development	Text to speech synthesis integrated in specific solutions for telecommunications, Automatic speech recognition and assistive technologies for human computer interface, Interactive Voice Response Systems, Online multimedia repositories using intelligent indexing and content searching.
Consulting	Multimedia technologies, data modelling, data mining, advanced methods for signal processing, eLearning solutions, project management, data security.
Training	Speech Processing, Statistical methods for data processing, Microprocessor-based systems.

ITEC – EMBEDDED GROUP

Contact details

Name	**Information Technology in Electronics Research and Development Center**
Acronym	**ITEC - Embedded**
Logo	
Site	http://emb.utcluj.ro/
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**The Faculty of Electronics, Telecommunications and Information Technology** **Applied Electronics Department**
Telephone	0264-401469
Fax	0264-594806
Director	Prof. Dr. Eng. Dan PITICA
e-mail	dan.pitica@ael.utcluj.ro

Areas of expertise

Embedded systems for Automotive
- Circuit design: modeling, simulation and cross-simulation of electronic circuits (analog, digital, power, RF/EMI) using: Multisim, Pspice, Matlab, Pcad;
- System design: modeling and simulation for electro-mechanical systems: power devices, actuators, mechatronics; using: Matlab, Simulink, LabVIEW;
- HW Application design: fast-prototype design, PCB design for mass production, BOM/AVL design, DfT and testability for embedded applications, power supplies, interface/signal conditioning boards;
- SW Application design: embedded control applications for OS and non-OS targets, broad range of targets (from small 8bit up to TriCore), V-modell development for SW, SW re-use;
- TW Application design: testing and design of testing systems: SW and HW testing process, HiL and SiL, design of test-cases for SW;
- Training services: LabVIEW trainings, Embedded Systems trainings, TW and HiL operation;
Power systems
- design, simulation and testing of power supplies with power factor correction
- PLC (Power Line Communication) for energy measurements equipment
- inductive heating technologies
SCADA systems
- control for automotive systems
- heating/oven control
- control systems for electrical motors
- data loggers for power industrial control, medical apps
Certifications
LabVIEW Certified Developer, FMEA Specialist, Zuken Sch & PCB, Mentor Graphics PI & SI

Team

Prof. Dr. Eng. Dan Pitica, Prof. Dr. Eng. Ciascai Ioan, Assoc. Prof. Dr. Eng. Gabriel Chindriş; Prof. Dr. Eng. Ovidiu Pop, Assoc. Prof. Dr. Eng. Liviu Viman, Assoc. Prof. Dr. Eng. Septimiu Pop, Lect. Dr. Eng. Vlad Bande, Lect. Dr. Eng. Mihai Dărăban, Lect. Dr. Eng. Raul Fizeşan, Lect. Dr. Eng. Rajmond Jánó, Lect. Dr. Eng. Adrian Tăut, Lect. Dr.Eng. Ionel Baciu, Assist.Dr. Eng. Alexandra Fodor, PhD student Eng. Marius Taut; PhD student Eng. Adelina Ilies; PhD student Eng. Elena Mirela Stetco, Eng. Aurelia Haragus;

Representative projects

"**Test environment development for ECU/TCU software for Continental AG, Germany**" – director Assoc.Prof. Gabriel Chindriş, PhD;
"**Development and maintenance of a SIL/HIL testing model for automotive ECU/TCU for Continental AG, Germany**"

– director Assoc.Prof. Gabriel Chindriş, PhD;
"**Induction Cooking Project**", research project no. 3/5.03.2008, Diehl-AKO Stiftung&Co.Kg Germany – director lect. eng Ovidiu Pop, PhD;
"**Stop/Start System for double clutch TCU**" - Continental AG, Germany – director Assoc.Prof. Gabriel Chindriş, PhD;
"**Embedded Data Logger for Heart Rate**" – Blatand GmBH, Germany - director Assoc.Prof. Gabriel Chindriş, PhD;

Significant results

The most representative publications of the past 5 years:

1. Alexandra Fodor, Gabriel Chindris, Rajmond Jano, and Dan Pitica, Thermal Modelling and Simulation Techniques for Multicore Processors, 42nd International Spring Seminar on Electronics Technology, ISSE 2019, Wroklaw, Poland, ISBN 978-83-7493-070-3
2. Marius Alexandru Taut, Gabriel Chindris, and Dan Pitica, Real-Time System with Integrated PID Algorithm used for DC Motor Control, 42nd International Spring Seminar on Electronics Technology, ISSE 2019, Wroklaw, Poland, ISBN 978-83-7493-070-3
3. Adelina Ioana Ilieș, Ioan Ciascai, and Dan Pitică, Methods for Reusing Li-ion Cells from Discarded Battery Packs, 42nd International Spring Seminar on Electronics Technology, ISSE 2019, Wroklaw, Poland, ISBN 978-83-7493-070-3
4. Mihai Alexandru Ilie, Elena-Mirela Stetco, Liviu Viman and Dan Pitica, AC Coupled Instrumentation Amplifier with Gyrators, 42nd International Spring Seminar on Electronics Technology, ISSE 2019, Wroklaw, Poland, ISBN 978-83-7493-070-3
5. Adelina Ioana Ilies, Dan Pitica, Gabriel Chindris, Alexandra Fodor, Test Bench for Electrical and Performance Evaluation of Lithium-Ion Batteries, 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging (SIITME), **ISBN:** 978-1-7281-3330-0
6. V. Bande, S. S. Pop, Triaxial Vibrating – Wire Transducer Implementation and Measurements, 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging (SIITME), **ISBN:** 978-1-7281-3330-0
7. S. Pop, V. Bande, Digital Processing Method used to Improve the Frequency Measurement Accuracy for Vibrating-Wire Transducers, 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging (SIITME), **ISBN:** 978-1-7281-3330-0
8. M.A. Dăbâcan, L. Viman, and V. Bande, New Laboratory Concept Used with the Data Acquisition System Fundamentals Course, 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging (SIITME), **ISBN:** 978-1-7281-3330-0
9. R. G. Voina, L. Viman and D. Pitica, Enhanced Stack-up for EMC, SI and PI in Mixed-Signal Systems, 2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging (SIITME), **ISBN:** 978-1-7281-3330-0
10. M. A. Taut, G. Chindris, and D. Pitică, PID Algorithm used for DC Motor Control, 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging (SIITME), ISBN: 978-1-5386-5577-1
11. I. M. Alexandru, A. Grama, L. Viman and D. Pitica, FFT Radix2 Core implemented on FPGA with DSP48 slices, 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging (SIITME), ISBN: 978-1-5386-5577-1
12. R. Fizesan, and O. Pop, PI timing measurements in high speed flash memory embedded systems, 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging (SIITME), ISBN: 978-1-5386-5577-1
13. Marius Alexandru Taut, Gabriel Chindris, Adrian Catalin Taut, and Dan Pitica, Model-in-the-Loop for Determining the Speed and Position of a DC Motor, 41st International Spring Seminar on Electronics Technology (ISSE), Zlatibor, Serbia, ISBN: 978-1-5386-5731-7, ISSN: 2161-2536
14. Adrian Taut, Gabriel Chindris, Mihai Daraban, Marius Taut, Resonant Power Converters used for Wireless Power Transfer, 41st International Spring Seminar on Electronics Technology (ISSE), Zlatibor, Serbia, ISBN: 978-1-5386-5731-7, ISSN: 2161-2536
15. Elena Mirela Stetco, Ovidiu Aurel Pop, Alin Grama, Doris Csipkes, Design, Modelling and Simulation of a Fifth Order Low-Pass Gm-C Filter, 2018 41st International Spring Seminar on Electronics Technology (ISSE), Zlatibor, Serbia, ISBN: 978-1-5386-5731-7, ISSN: 2161-2536 , DOI: 10.1109/ISSE.2018.8443770 , WOS:000449866600091
16. Elena-Mirela Stetco; Ovidiu Aurel Pop; Alin Grama; Doris Csipkes ; Emilian Ceuca, Design and Simulation of a Sixth Order Band-Pass Gm-C Filter, 2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging (SIITME), ISBN: 978-1-5386-5577-1, DOI: 10.1109/SIITME.2018.8599271
17. Daraban, Mihai; Chindris, Gabriel; Taut, Adrian; et al., Uncertainty Budget for Hardware-In-the-Loop Test System 41st International Spring Seminar on Electronics Technology (ISSE) Location: Zlatibor, SERBIA Date: MAY 16-20, 2018, Book Series: International Spring Seminar on Electronics Technology ISSE Published: 2018

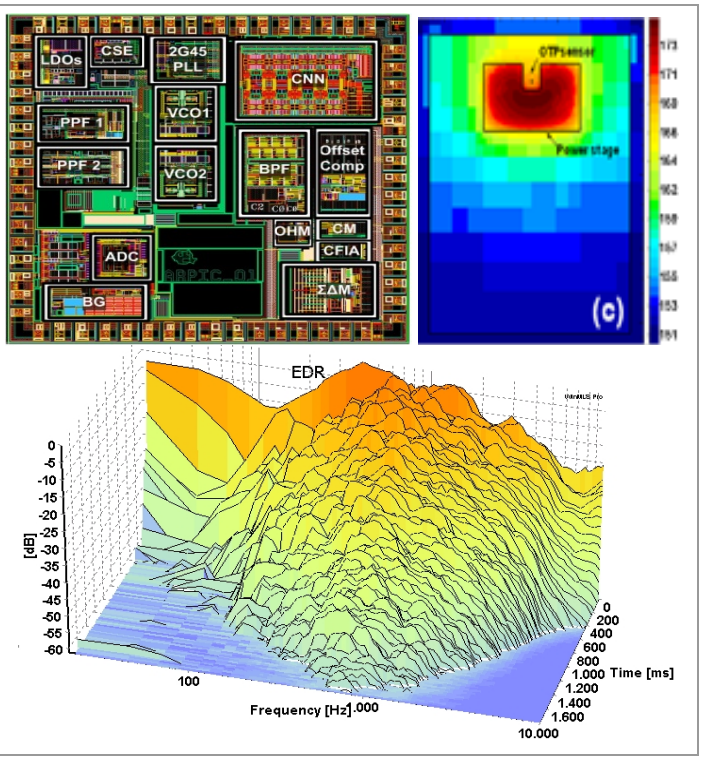
The offer addressed to the economic environment

Research & development	Calculus, design, simulation and analysis of power electronics circuits; Numerical methods of analysis; Control algorithms;Transducers physics;Electronic materials; Software, hardware and testware for embedded systems; Real-time measurements;Power electronics;Power dam SCADA systems; Applied electronics for white-goods;
Consulting	Electronics circuits and devices modeling and simulation; IP and patent analysis; Test equipment proof-of-concept; Design for technological transfer (DFx); EMI/EMC in PCB; PCB/PWB design; Software for embedded; Measurement, analysis and simulation for electronics;Real-time systems calibration; Design of electronics systems;
Training	LabVIEW training; Training for modeling and simulation; Training for embedded and real-time systems; Training for PCB design; Training for measurements, analysis and testing;

DIGITALLY ENHANCED ANALOG AND RF INTEGRATED CIRCUITS

Contact details

Name	**Digitally Enhanced Analog and RF Integrated Circuits**
Acronym	**DERFAIC**
Logo	
Site	http://www.icdesign.utcluj.ro/
Address	26-28 G. Baritiu St, Rooms 26, B2, B3, S3.1, S3.2, Cluj-Napoca
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technology** **Basis of Electronics Department**
Telephone	+40 264 401243, +40 264 402454
Fax	+40 264 591689
Director	Prof. Dr. Marina Topa
e-mail	Marina.Topa@bel.utcluj.ro



Areas of expertise

Design of RF, Analog and Mixed–Signal Integrated Circuits
- Reconfigurable and programmable analog circuits; Analog Front-Ends for sensors
- High performance Power Management circuitry, including Energy harvesting and conversion
- Digitally-intensive frequency synthesizers and Low-power radio transceivers

Circuit and Signal Theory and Applications
- Systematic and optimized design of analog and digital circuits
- System modelling and analysis; Feedback theory & stability

Electronic circuits and systems for acoustics
- Optimized synthesis of acoustic equalizers; Analysis and improvement of the acoustic behaviour of enclosures

Methodologies for optimized design and testing of electronic circuits and systems
- Robustness optimization; Multivariate performance analysis for application verification. Yield analysis

Algorithms and techniques for compensating effects of non-idealities inherent to analog circuits & systems
- Compensation of IQ mismatch in integrated radio receivers; Reduction and compensation of DC offsets

Team

Prof. Dr. Marina Topa, Assoc. Prof. Dr. Marius Neag, Assoc. Prof. Dr. Botond-Sandor Kirei, Lecturer Dr. Ioana Sărăcuţ, Lecturer Dr. Erwin Szopos, Lecturer Dr. Raul Onet, Assist. Prof. Dr. Călin Fărcaș, Dr. Ingrid Kovacs, Dr. Cosmin Sorin Pleșa, 10 PhD and Master students

Representative projects

Dezvoltare integrată 4.0, POC 72/1/2, Componenta 1: RO-ECSEL - Crearea de sinergii cu acțiunile de CDI ale programului cadru ORIZONT 2020 al Uniunii Europene și alte programe CDI internaționale (2020-2021)
Parteneriate pentru transfer de cunoștințe şi tehnologie în vederea dezvoltării de circuite integrate specializate pentru creșterea eficienței energetice a noilor generații de vehicule, POC 2014, Ctr. 19/01.09.2016 (2016-2021)
NAPOSIP – "New Approaches to Analyzing and Designing High Frequency Sintetizers Performance for Modern Communication Systems", PNIII 43 BG/2016 (2016-2018), https://naposip.utcluj.ro/node/1
"Analog Front-End for Automotive Sensors", Consultancy Contract , 2015-2017
"New Methodologies for multivariate performance analysis", Consultancy Contract , 2014-2016
"Digital compensation of I/Q mismatches in wide-band radio receivers", POSDRU Postdoc Project, 2010-2013
"**Frequency synthesizer for UWB transceiver tailored to location applications**", Consultancy Contract, 2013
"Design of analog blocks within the baseband of a radio transceiver for geological sensor, able to operate in harsh environments", Consultancy Contract, 2010-2011
"New approaches in the design of multi-standard integrated radio receivers for digital radio and mobile TV: from system architecture to novel topologies and circuit solutions", CNCSIS PCE-Idei, (2008-2011)

Significant results

Representative publications in the last 5 years:

1. P. Miresan, R. Onet, M. Neag, M.D. Topa, C. Chira – "Design options for implementing in standard CMOS drivers for MEMS body biasing", Microelectronics Journal, vol. 97 (2020) 104705
2. Cosmin-Sorin Plesa, M. Neag, C. Boianceanu - "Design of Over-Temperature Protection for Switched-Capacitor DC-DC Converter Based on Electro-Thermal Simulations", Romanian Journal of Information Science and Technology, Volume 22, Number 2, 2019, pages 144–157
3. C.S. Plesa, B. Dimitriu, M. Neag,– Design Options for Thermal Shutdown Circuitry with Hysteresis Width Independent on the Activation Temperature, Advances in Electrical and Computer Engineering Volume 19, No. 1, 2019, pp. 57-62
4. B.S.Kirei, V.I.M. Chereja, S.Hintea, M.D.Ţopa, "PAELib: A VHDL Library for Area and Power Dissipation Estimation of CMOS Logic Circuits"*, Advances in Electrical and Computer Engineering,* Volume 19, Number 1, pp. 9-16, 2019
5. I. Kovacs, M. Neag - "New dual-loop topology for ring VCOs based on latched delay cells", Proceedings of 2018 IEEE International Symposium on Circuits and Systems (ISCAS 2018), Florenta, 27-30 May 2018, pp. 1-5
6. C.S. Plesa, M. Neag, L. Radoias – Design Options for Thermal Shutdown Circuitry with Hysteresis Width Independent on the Activation Temperature, Advances in Electrical and Computer Engineering, Vol. 17, Number 1, 2017, pp. 69-74
7. I. Kovacs, M.D.Ţopa, A. Buzo, G.Pelz, "Integrated Circuits' Characterization for Non-normal Data in Semiconductor QualityAnalysis", Proc. IEEE European Test Symposium (ETS), Lymasol, Cyprus, 22-26 May, 2017
8. C.-S. Plesa, M. Neag, C. Boianceanu and A. Negoita; – "Design methodology for over-temperature and over-current protection of an LDO voltage regulator by using electro-thermal simulations", Microelectronics Reliability, Volume 79, December 2017, pages 509-516
9. E. Szopos, M. Neag, I. Sărăcuţ, V. Popescu and M. D. Ţopa, "Synthesis Tool Based on Genetic Algorithm for FIR Filters with User-Defined Magnitude Characteristics"**,** *Circuits, Systems and Signal Processing*, vol. 35, Issue 1, pp 253-279, January 2016, Springer, DOI: 10.1007/s00034-015-0054-0
10. C. Contan, B. S. Kirei and M. D. Topa, "Error-dependent step-size control of adaptive normalized least-mean-square filters used for nonlinear acoustic echo cancellation", *Signal Image and Video Processing*, vol. 10, pp. 511-518, 2016
11. M. Neag, R. Onet, I. Kovacs. P. Martari, „Comparative Analysis of Simulation-Based Methods for Deriving the Phase- and Gain- Margins of Feedback Circuits with OpAmps", *IEEE Transactions on Circuits and Systems I - Regular Papers*, vol 62, issue 3, March 2015, pp. 625-634, DOI: 10.1109/TCSI.2014.2370151
12. R. Onet, M. Neag, I. Kovacs, M.D. Topa, S. Rodriguez, A. Rusu, "Compact Variable Gain Amplifier for a Multistandard WLAN/WiMAX/LTE Receiver", in *IEEE Trans.Circuits and Systems I:* vol. 61, no.1, 2014, pp. 247-257

Patents:

D. Petreus, M. Neag, B. Morley – Improved MPPT control for PWM-based DC-DC converters with average current control, Republic of Ireland, 2010, IES20100461 (A2), WO2012010613 (A1)
M. Neag, M. McCullagh, G. Marow, M. McLaughlin, I. Kovács - Frequency Comparator and Early-Late Detector, US patent 2015, US20160191035

Product realized for industrial beneficiaries:

1. Low dropout voltage regulators with fast response to load transients: 3 test-chips designed and integrated in a custom CMOS technology for Infineon Technologies Romania
2. Low power Switched-Capacitor DC-DC Converter for automotive applications: integrated circuit (IC) designed and implemented in a custom CMOS technology for Infineon Technologies Romania
3. High-Voltage LDO for automotive applications: IC designed for Infineon Technologies Romania, in mass production
4. Analog Front-End for automotive sensors - Integrated circuit designed in a 0.18um CMOS technology, produced as a test-chip for Melexis Technologies NV, Belgium
5. Frequency synthesizer integrated within an UWB transceiver produced in 90nm technology, for Anacores Ltd., Castlebar, Republic of Ireland
6. Integrated transceiver for geological explorations – chip mass produced in a CMOS 0.35um technology, for Silansys Semiconductor Ltd., din Dublin, Republic of Ireland, currently used in industrial exploration of oil deposits
7. Smart solar charger for Li-Ion batteries and supercapacitors, with a novel analog-digital MPPT algorithm – demo board realized for Anacores Ltd., Castlebar, Republic of Ireland

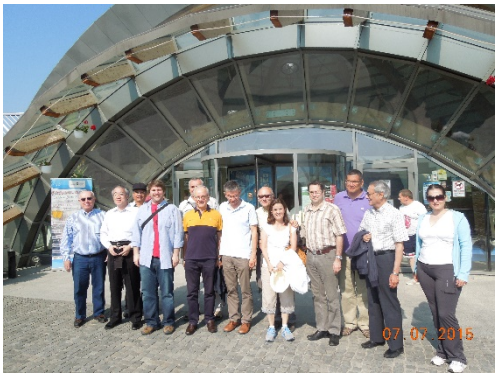
The offer addressed to the economic environment

Research & development	Development of adaptive filter theory, with applications in the processing of non-stationary signals by non-linear systems Extensions of the classical feedback theory, with applications in the stability analysis Analysis and design of electronic systems and circuits using advanced modelling and optimization methods Adaptive filters for signal processing and system analysis, with applications in acoustics Electronic systems and circuits for harvesting power from un-conventional energy sources
Consulting	Analysis and design of analog, RF and mixed-signal integrated circuits Analysis and design of digital systems, including FPGA and/or ASIC implementation Top-level verification of digital systems using SystemVerilog and SystemC Analysis and design of electro-acoustic systems – echo cancellation, reverberation control, signal separation, equalization etc.
Training	Design of analog, RF and mixed-signal integrated circuits using the industry-standard software package Virtuoso – Cadence: Schematic Editor, ADE, Layout Editor, Assura

SIGNAL PROCESSING GROUP

Contact details

Name	**Signal Processing Group**
Acronym	**SPG**
Logo	Signal Processing Group
Site	www.sp.utcluj.ro
Address	26-28 G. Barițiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technology** **Bases of Electronics Department**
Telephone	+40 264 401804
Fax	+40 264 592055
Director	Prof. Dr. Eng. Corneliu Rusu
e-mail	Corneliu.Rusu@bel.utcluj.ro



RTSP 2015
https://sp.utcluj.ro/RTSP2015/HomeRTSP2015.html

RTSP 2017
https://sp.utcluj.ro/RTSP2017/HomeRTSP2017.html

Areas of expertise

Adaptive filters for data echo cancellation – A family of stochastic gradient algorithms and their behaviour in the data echo cancellation work platform have been studied. The cost function adaptation algorithms use an error exponent update strategy based on an absolute error mapping, which is updating at every step. Performances similar to standard variable step-size methods have been obtained.
Signal reconstruction and phase retrieval – The phase retrieval problem is to reconstruct a signal given the modulus of its Fourier transform. This problem is associated with various applications including antenna design, filter design, image reconstruction. Recent research results relate phase retrieval to properties of zero-phase sequences or trigonometric polynomials.
Extracting a digital elevation model from a colour-coded relief scanned map – The focus of the project is in extracting a digital elevation model (DEM) from a colour-coded relief scanned map. The map is pre-processed in order to remove the dithering effect that appears during the printing process. For the pre-processing we propose a WHMM based algorithm, which preserves better the thin edges than the vector median filtering.
Exploration of singing voice individuality – The human voice is the result of a complex biological mechanism. It carries out information about our thoughts, feelings, and state of health. This great amount of information of different types can be extracted and interpreted. A new research domain is the acoustic configuration of the vocal sounds in singing. The singing voice analysis is useful for training singers in a professional manner.
Audio based solutions for detecting intruders in wild areas – The motivation of such an application is related to protection of large wildlife regions, such as forests, lakes, and other natural reservations. The sounds of interest are represented by humans, engines, birds and animals. In order to simulate various environmental situations, different types of noisy environments have been considered. Both low complexity and standard audio classification methods are delivered. Standard audio classification methods prove to be more robust, but at an expense of significantly increased complexity. Since low complexity systems are more feasible for monitoring remote areas, the complexity issue is analyzed and solutions are proposed.

Team

Prof. Dr. Eng. Corneliu RUSU, Assoc. Prof. Dr. Eng. Lăcrimioara GRAMA, As. Dr. Eng. Alexandru LODIN
Phd. students: Anamaria ICHIM, Andrei CIUPARU, Harald BÂRZAN, Toma Telembici,. MSc student Lorena MUSCAR

Representative projects

OMNI-Z – "Versatile and economically viable robotic platform for indoor navigation in cluttered environments with obstacles", PN-III-P2-2.1-PTE-2019-0867, (2020-2022), http://www.citst.ro/projects/omni-z/
SASID – "Smart Acoustic Sensor for Intruder Detection", PN-III-P2-2.1-PED-2016-1608, (2017-2018), https://sp.utcluj.ro/SASID2017/HomePage.html
ROXAC – "Improving contextual awareness of a robot through the analysis of acoustic information", PN-III-P2-2.1-BG-2016-0378, https://sp.utcluj.ro/ROXAC2016/HomePage.html
PAV3M – "Intelligent management system, monitoring and maintenance of pavements and roads using modern imagistic techniques", PCCA (2014-2016), http://193.231.19.17/PAV3M/
RTSP 2015, "International Workshop on Recent Trends on Signal Processing" http://sp.utcluj.ro/RTSP2015/HomeRTSP2015.html **(2015)**
SpeD, **"The 7th International Conference on Speech Technology and Human-Computer Dialogue"**, http://www.sped2013.ro/ (2013)
SPAMEC, **"Signal Pocessing and Applied Mathematics for Electronics and Communication"**, ANCS, http://sp.utcluj.ro/SPAMEC/HomeSPAMEC2011.html (2012)
SPSWC, **"Signal Processing Systems for Wireless Communications"**, CNCSIS, http://sp.utcluj.ro/SPSWC/HomeSPSWC2008.html (2008)

Significant results

The most representative publications of the past 5 years:

1. L. Grama, C. Rusu, "Extending Assisted Audio Capabilities of TIAGo Service Robot," International Conference on Speech Technology and Human Computer Dialog (SpeD 2019), 10-12 Oct. 2019, Timisoara, Romania, pp. 1-8, DOI: 10.1109/SPED.2019.8906635
2. A. Lodin, L. Grama, C. Rusu," Python Implementation of the State-Space Method to Convert Analog Filters Described by a Netlist to Digital Filters," 6th International Symposium on Electrical and Electronics Engineering (ISEEE 2019), 18-20 Oct. 2019, Galati, Romania
3. C. Popescu, L. Grama, C. Rusu, "Automatic Text Summarization by Mean-absolute Constrained Convex Optimization," 41st International Conference on Telecommunications and Signal Processing (TSP 2018), pp. 706-709, July 4-6, 2018, Athens, Greece, DOI: 10.1109/TSP.2018.8441416, WOS: 000454845100158
4. L. Grama, C. Rusu, "Adding audio capabilities to TIAGo service robot," 13th International Symposium on Electronics and Telecommunications (ISETC 2018), pp. 263-266, November 8-9, 2018, Timișoara, Romania, DOI: 10.1109/ISETC.2018.8583897, WOS: 000463031500059
5. A. Lodin, L. Grama, C. Rusu, "From bulky analog active filters to digital filters," 13th International Symposium on Electronics and Telecommunications (ISETC 2018), pp. 271-274, November 8-9, 2018, Timișoara, Romania, DOI: 10.1109/ISETC.2018.8583912, WOS: 000463031500061
6. L. Grama, C. Rusu, "Choosing an Accurate number of Mel Frequency Cepstral Coefficients for Audio Classification Purpose," 10th International Symposium on Image and Signal Processing and Analysis (ISPA 2017), pp. 225-230, Sept. 18-20, 2017, Ljubljana, Slovenia, DOI: 10.1109/ISPA.2017.8073600, WOS: 000442428600042
7. C. Rusu, L. Grama, "Recent Developments in Acoustical Signal Classification for Monitoring," (invited paper) 5th International Symposium on Electrical and Electronics Engineering (ISEEE 2017), pp. 1-10, Oct. 20-22, 2017, Galati, Romania, DOI: 10.1109/ISEEE.2017.8170705; WOS: 000428234400081
8. E. Buhus, L. Grama, C. Serbu, "A Facial Recognition Application Based on Incremental Supervised Learning," 13th International Conference on Intelligent Computer Communication and Processing (ICCP 2017), pp. 279-286, Sept. 7-9, 2017, Cluj-Napoca, Romania, DOI: 10.1109/ICCP.2017.8117017; WOS: 000417426600034
9. L. Grama, C. Rusu, "Audio signal classification using Linear Predictive Coding and Random Forests," International Conference on Speech Technology and Human-Computer Dialogue (SpeD 2017), pp. 1-9, July 6-9, 2017, Bucharest, Romania, DOI: 10.1109/SPED.2017.7990431; WOS: 000425849600006
10. L. Grama, L. Tuns, C. Rusu, "On the Optimization of SVM Kernel Parameters for Improving Audio Classification Accuracy," 14th International Conference on Engineering of Modern Electric Systems (EMES 2017), pp. 224-227, June 1-2, 2017, Oradea, Romania, DOI: 10.1109/EMES.2017.7980420, WOS: 000427085200053

See http://www.sp.utcluj.ro/SPGroup/SPG_Pub_Database.html for SPG publications.

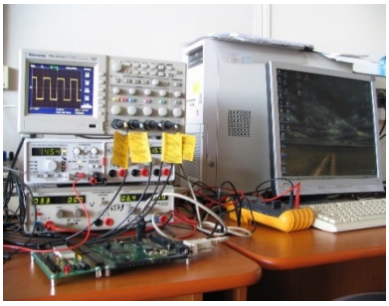
The offer addressed to the economic environment

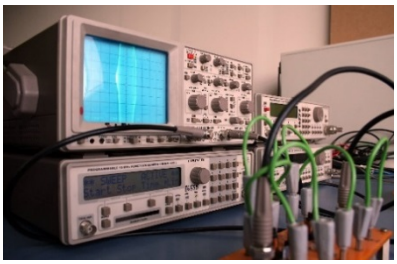
Research & development	Signal Processing Group makes research - in the core areas: signal reconstruction, adaptive filtering, compressive sampling, acoustic sensors, processing of signals obtained from specific sensors or from medical devices. - in the applied fields: sensor arrays, image processing, security and protection, intruder detection and forensics.
Consulting	Signal Processing Group provides consulting in the areas of digital signal and image processing, digital filtering, optical signal processing, computer analysis and synthesis of circuits, algorithms for signal processing, numerical methods, medical electronics, sensors and devices, wireless networks.
Training	Digital signal processing, digital filter design, adaptive filtering, signal modeling, mathematical methods for signal processing, applied statistics, optical processing and storage of information, Fourier optics.

INTEGRATED CIRCUITS AND SYSTEMS GROUP

Contact details

Name	**Integrated Circuits and Systems Group**
Acronym	**ICSG**
Logo	
Site	http://www.bel.utcluj.ro/grup_csi
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Theory** **Basis of Electronics Department**
Telephone	+40 264 401227
Fax	+40 264 591340
Director	Prof. Dr. Eng. Sorin Hintea
e-mail	Sorin.Hintea@bel.utcluj.ro





Areas of expertise

Design of mixed analog/digital circuits for telecommunication systems
The study and the development of some analog adaptive circuits, aimed for the practical realization of the "software defined radio" concept. The emphasis was the development of some reconfigurable filter architectures with programmable parameters, and their digital control with evolutionary methods.
Design of low-power programmable analog/mixed-signal circuits for biomedical applications
The development of some analog programmable circuits, aiming for bio-potential monitoring, bio-sensing and electro-stimulation of the human tissue. The emphasis was signal acquisition (amplification and artefact removal), signal processing (determination of the ECG or EMG morphology) and
correlation of the physiological measurements.
Application of computational intelligence / deep learning techniques
Development and implementations of applications based of computational intelligence / deep learning techniques: analysis and design of some analog circuits; modelling (function fitting, pattern recognition, prediction); control applications; deep neural network implemented in Python.
Optoelectronics and photonics with optical communications
Applications with optical distributed sensors; Modelling and simulation of the special optical fibres (LMA, rare earth doped fibres); applications with optical biosensors based on plasmonic effect and fluorescence; optical integrated circuits modelling and simulation; photonic point-of care platforms with VR/AR capabilities; wearable devices based on embedded systems.
Advanced design techniques of analog and digital integrated circuits
The design of complex electronic circuit structures under the Mentor Graphics and Cadence design environment: reconfigurable circuits with applications in auditory prosthesis, transmission of the biomedical parameters over an electromagnetic link, radiofrequency receptors, low-power integrated circuits.

Team

Prof. Dr. Eng. Sorin Hintea, Prof. Dr. Eng. Gabriel Oltean, Assoc. Prof. Dr. Eng. Ramona Galatus, Assist Prof. Dr. Eng. Gabor Csipkes, Assist Prof. Dr. Eng. Paul Farago, Assist Prof Eng. Lorant Szolga, Asist prof Emilia Sipos, Asist prof Laura Ivanciu, Assoc. Prof. Dr. Doris Csipkes, Asist prof Robert Groza, Asist prof Albert Fazakas, Assoc. Prof. Dr. Eng. Mihaela Cirlugea, Teacher Assistant, PhD student Adriana Potarniche

Representative projects

ERANET-„ Innovative Technological Approaches for validation of Salivary AGEs as novel biomarkers in evaluation of risk factors in diet-related diseases" , UMF Cluj, https://salivages.wordpress.com/team/ (2018-2021)
DAM-FU – "Intelligent hydro-dams behavior monitoring system through information fusion", PN-III-CERC-CO-PTE-2016, 2016-2018.
nSensOFWater – "Nano-Enabled Optical Fiber Biosensor Device with Smartphone Interface for Fast and Selective Detection of Antibiotics in Water", PN-III-P2-2.1-PED-2016-0172, (2017-2018), http://www.bel.utcluj.ro/~galatusr/PED67UEFISCDI.html
"**Design of a portable biomedical monitoring system with intelligent parameter control**", CICDI-2017, 2000/12.07.2017 (2017-2018)

StableNextSo – "Stable Next-Generation Photovoltaics: Unraveling degradation mechanisms of Organic Solar Cells by complementary characterization techniques" FP7-COST MP1307 (I), (2014-2018) link: https://www.cost.eu/actions/MP1307
PARTING -"**Design of some integrated circuits for biomedical applications using evolutionary computation techniques**" POSDRU/159/1.5/S/137516 „Parteneriat interuniversitar pentru excelenta in inginerie - PARTING"
"**Design of analog reconfigurable circuits using evolutionary algorithms for fourth generation mobile communication terminals**" (IDEI 657/2009-2011)
INTEREVISS – "**Serviciu interactiv, in timp real pentru cresterea sigurantei publice in aglomerari urbane**", PN-II-PT-PCCA-2013-4, 2014 (2014-2016).
"European Network for High Performance Integrated Microwave Photonics", HORIZON2020-COST-CA16220 (4 Oct 2017-3 Oct 2021), Link: https://www.cost.eu/actions/CA16220
"Advanced Fibre Laser and Coherent Source as tools for Society, Manufacturing and Lifescience", (10 Dec 2014-9 Dec 2018), HORIZON2020- COST-MP 1401 Link: https://www.cost.eu/actions/MP1401 ,
"Innovative methods in radiotherapy and radiosurgery using synchrotron radiation", HORIZON 2020-COST-TD1205**-** (21 May 2013-20 May 2017), Link: https://www.cost.eu/actions/TD1205/

Significant results

The most representative publications of the past 5 years (2019-2015):

1. **Farago, P., Galatus, R., Hintea**, et al, An Intra-Oral Optical Sensor for the Real-Time Identification and Assessment of Wine Intake, SENSORS, Volume: 19 Issue: 21, Article Number: 4719, DOI: 10.3390/s19214719, NOV 2019
2. **R. Galatus, P. Farago**, et al, Distributed fluorescent optical fiber proximity sensor Towards a proof of concept, Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy, vol. 198, pp. 7-18, 2018, ISSN: 1386-1425.
3. P**. Farago, R. Groza, S. Hintea**. High precision activity tracker based on the correlation of accelerometer and EMG data. 2019 42ND TSP Conference, JUL 01-03, 2019, Budapest, Hungary, pp. 428-431, ISBN:978-1-7281-1864-2
4. **P. Farago, R. Groza, L. Ivanciu, S. Hintea**. A Correlation-based Biometric Identification Technique for ECG, PPG and EMG. 2019 42ND TSP Conference, JUL 01-03, 2019,Budapest, Hungary,pp.716-719,ISBN:978-1-7281-1864-2
5. **Gabriel Oltean**, Victor Oltean, Horea Alin Balea, Method for Rapid Development of Arduino-based Applications Enclosing ANN, 45th Annual Conference of the IEEE Industrial Electronics Society, IEEE, Lisbon, Portugal, 14-17 Oct, 2019;
6. **Gabriel Oltean**, Camelia Florea, Radu Orghidan, Victor Oltean, Towards Real Time Vehicle Counting using YOLO-Tiny and Fast Motion Estimation , 25th International Symposium SIITME, IEEE, Cluj-Napoca, Romania, 23-26 October, 2019;
7. **Oltean, G, Ivanciu, Laura**, Implementation of a Fuzzy Logic-Based Embedded System for Temperature Control, IEEE 40th International ISSE2017, DOI: 10.1109/ISSE.2017.8001006, 10-14 May, Sofia, Bulgaria, 2017
8. **Oltean, G, Ivanciu, Laura**, Gordan, Mihaela, Stoian, I.,Kovacs, I., Predictive model for the horizontal displacement of a dam using autoregressive neural network, IEEE 21st International Conference INES 2017, Larnaca, Cipru, 20-23 octombrie, Electronic ISBN: 978-1-4799-7678-2 2017, 2017;
9. Blidar, A., Feier, B., Tertis, M., **Galatus, R.**, Cristea, C., Electrochemical surface plasmon resonance (EC-SPR) aptasensor for ampicillin detection, Anal Bioanal Chem (2019) 411: 1053. Doi: 10.1007/s00216-018-1533-5 (Impact factor= 3.28)
10. N Cennamo, F. Mattielo, **R. Galatus**, et al, Plasmonic sensing in D-shaped POFs with Fluorescent optical fibers as light sources, IEEE Transactions on Instrumentation & Measurement, Issue 4, April 2018, pp 754 - 759
11. C Cristea, M Tertis, **R. Galatus** -"Magnetic Nanoparticles for Antibiotics Detection, Nanomaterials 2017, 7(6), 119;
12. Cecilia Cristea, Florin Graur, **R. Galatus**, et al, Nanobiomaterials for Cancer Diagnosis and Therapy, INTERNATIONAL BOOKS- CHAPTER in "Nanobiomaterials: Applications in Drug Delivery, CRC Press, 2017
13. **Szolga, L. A.; Galatus, R.; Oltean, G.;** et al., Intrusion Detection System Based on Plastic Optical Fiber 2017 IEEE 23RD INTERNATIONAL SYMPOSIUM SIITME Pages: 403-408 Published: 2017

Diploma of Excellence and Medal Inventica 2019 - **Faragó Paul, Gălătuș Ramona-Voichița, Groza Robert-Gheorghe**, The XXIII International Exhibition of inventics „Inventica 2019", 26-28 June 2019, Iaşi, Romania.
Diploma and Silver Medal - **Faragó Paul, Gălătuș Ramona-Voichița, Groza Robert-Gheorghe**, Salonul Internațional de Invenții și Inovații "TRAIAN VUIA" Timișoara, 12-14 iunie, 2019, Romania.

The offer addressed to the economic environment

Research & development	Analog, digital and mixed-signal VLSI integrated circuit design methods; Analysis, synthesis and design techniques for current-mode analog VLSI circuits; Evolutionary techniques used in the synthesis of VLSI electronic circuits; Application development with HDL languages (Verilog, VHDL); Design and implementation of digital systems with FPGAs; Application of computational intelligence / deep learning techniques; Synthesis of some analog digital and mixed signal integrated circuits up to mask layer, using the Mentor Graphics and Cadence VLSI design environment;
Consulting	Analog, digital and mixed-signal design, non-conventional design techniques: neural networks, deep neural networks, fuzzy systems, genetic algorithms; optical sensors and optoelectronic systems; electronic and optoelectronic systems for biomedical applications
Training	The Integrated Circuits and Systems Group offers instruction/training in the following domains: computer aided design of analog and digital circuits; computational intelligence / deep learning techniques; photonic sensors and biosensors, optoelectronic systems; electronic systems for medical applications.

RENEWABLE ENERGIES GROUP

Contact details

Name	**RENEWABLE ENERGIES GROUP**
Acronym	**GCER**
Logo	
Site	http://renewable-energy.utcluj.ro http://research.utcluj.ro/tl_files/research/Research%20Domain/ETTI/GCER_PetreusDorin.pdf
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technology,** **Applied Electronics Department**
Telephone	+40 264 401415
Fax	+40 264 594806
Director	Prof. Dr. Eng. Dorin Petreuș
e-mail	dorin.petreus@ael.utcluj.ro

Areas of expertise

Renewable Energy
- Develop new ways to improve energy harvesting and storing for microgrids.

Switched Mode Power Supplies(SMPS) and Power Electronics
- Study and develop new topologies in the field of SMPS.

Digital Control
- Study and develop new non-linear algorithms that can be used in the field of power supplies/grid tied inverters.

System Modelling and Simulations
- Develop macro-models for the switched mode power converters in order to improve simulation times.

Embedded Systems
- Develop systems with microcontrollers in C/C++ and assembly for different types of applications: low cost, time constrained, wireless, industrial and sensing.

Team

Prof. Dr. Eng. Dorin Petreuș, Assoc. Prof. Dr. Eng. Niculaie Palaghiță, Assoc. Prof. Dr. Eng. Cristian Fărcaș, Lecturer Dr. Eng. Toma Pătărău, Lecturer Dr. Eng. Radu Etz, Lecturer Dr. Eng. Ionuț Ciocan, Assist. Dr. Eng. Lazar Eniko, Dr. Eng. Dan Filip, Eng. Andreea Ignat, Eng. Radu Joian, Eng. Izsak Ferencz, Eng. Gherman Tudor, Eng. Petri Anamaria, Eng. Ciascai Alexandru.

Representative projects

MVDC-ERS - "Flexible medium voltage DC electric railway systems", H2020-S2RJU-OC-2018, (2018-2021)
MICROINV – "Microinverters with high power density and high efficiency for renewable energies" POC-A1-A1.2.3-G-2-15.
REMSIS, "Renewable energy management system used for small isolated communities", http://remsis.utcluj.ro/, (2013-2016)
MICROCCP, **"Miniaturized Equipment with Capacitively Coupled Plasma Microtorch and Analytical Technologies for Simultaneous Elemental Determination used in Environment and Foods control"**, http://www.chem.ubbcluj.ro/~edarvasi/Proiect/index.html (2012-2015)
INNOWECS, **"Innovative wind energy conversion micro-system with direct-driven electric generator for residential uses"**, http://innowecs.utcluj.ro/ (2012-2015)
ATM32, **"Four cells galvanic bath"**, PNII-IN-CI, (2014)
ATM41, **"Medical equipment for magnetic therapy with low frequency pulsed magnetic field"**, 20CI-PN2-IN-CI, (2012)
"Intelligent System for Battery Charging Based on Optimized Algorithms for Maximum Power Tracking in Solar Installations", http://solar.utcluj.ro/rezultate-en.html (2007-2009)
FLUOROSPEC, **"Optoelectronic Equipment and Innovative Method of High Precision and Sensitivity Based on**

Non-conventional Fluorescence Spectrometry for Testing and Control of Some Environmental Agents", PNCDII, (2008-2010) **TRANS-SUPERCAP**, **"Energy Optimized Electrical Systems for Land Transport using Batteries and Supercapacitors"**, PNII-P4, (2007-2009)

Significant results

The most representative publications of the past 5 years:

1. Petreus, D.; Etz, R.; Patarau, T.; et al., An islanded microgrid energy management controller validated by using hardware-in-the-loop emulators INTERNATIONAL JOURNAL OF ELECTRICAL POWER & ENERGY SYSTEMS Volume: 106 Pages: 346-357 Published: MAR 2019
2. Lazar, Eniko; Petreus, Dorin; Etz, Radu; et al., Software Solution for a Renewable Energy Microgrid EmulatorADVANCES IN ELECTRICAL AND COMPUTER ENGINEERING Volume: 18 Issue: 1 Pages: 89-94 Published: 2018
3. Unguresan, Paula V.; Porumb, Raluca A.; Petreus, Dorin; et al., Orientation of Facades for Active Solar Energy Applications in Different Climatic Conditions JOURNAL OF ENERGY ENGINEERING Volume: 143 Issue: 6 Article Number: 04017059 Published: DEC 2017
4. Neamtu, Marius Ovidiu; Balan, Mugur; Petreus, Dorin; et al.,CONSIDERATIONS ON A GEOTHERMAL ELECTRIC POWER GENERATOR BASED ON ORGANIC RANKINE CYCLE AS A PART OF A SMART-GRID REVUE ROUMAINE DES SCIENCES TECHNIQUES-SERIE ELECTROTECHNIQUE ET ENERGETIQUE Volume: 62 Issue: 4 Pages: 431-435 Published: OCT-DEC 2017
5. D. Petreus, S. Daraban, M. Cirstea, "Modular Hybrid Energy Concept Employing a Novel Control Structure Based on a Simple Analog System", *Advances in Electrical and Computer Engineering*, Vol. 16, No. 2, pp. 3-10, 2016 DOI:10.4316/AECE.2016.02001.
6. Petreus Dorin, Patarau Toma, Etz Radu, Lazar Eniko, "Supplying a Renewable Energy Single Phase Microgrid from a Biomass Generator Using a Three Phase Induction Machine", *10th International Conference on Compatibility, Power Electronics and Power Engineering CPE-POWERENG2016*, Bydgoszcz, Polonia, 29.06.2016 – 01.07.2016, pp. 208-213. DOI: 10.1109/CPE.2016.7544186.
7. Etz, R., Petreus, D., Frentiu, T., Patarau, T., Orian, C. "An Indirect Method and Equipment for Temperature Monitoring and Control", *Advances in electrical and computer engineering*. AECE, Issue 4, 2015.
8. Dorin Petreus, Radu Etz, Toma Patarau, Cristian Orian, "Microgrid concept based on distributed renewable generators for a greenhouse", *Acta Technica Napocensis*, vol. 56, no. 2 2015, pp. 31-36.

Significant solutions:

Power supplies with power factor correction, grid tied inverters, UPS, low/high power battery chargers from photovoltaic panels, maximum power point tracking algorithms, power optimizers for improving energy harvesting, bidirectional converters, battery equalizers, digital control applied in switched mode power supplies (DSPs, FPGA), class E amplifier for plasma generator, hybrid storage system using supercapacitors and battery packs, battery inverters, low power induction generators, energy management algorithms used in renewable energy microgirds, algorithms for sizing microgrids with renewable energies.

Products and technologies:

1. Design and implementation of switched mode power supplies/inverters; **2**. Embedded programming for DSPs (dsPIC and TMS328F28/F24) and microcontrollers (Microchip, TI, Atmega, 8051) with industrial applications; **3**. Design and implementation of systems for energy harvesting (photovoltaics, wind energy, geothermal and biomass); **4**. Power optimizers (Distributed maximum power point tracking systems)/microinverters for energy harvesting; **5**. Design and implementation of battery/supercapacitor chargers; **6**. Implementation of analog/digital control; **7**. Implementation of electronic systems to be used for chemical/medical experiments (plasma generator, magneto therapy, electrotherapy).

Patents: International

D. Petreus, M. Neag, B. Morley – "Improved MPPT-Control for PWM-based DC-DC converters with average current control", international no. WO 2012/010613 A1, January 26, 2012.

Patents: National

1. BIPOLAR CURRENT PULSE AMPLIFIER IN HYBRID BRIDGE WITH SYMMETRICAL CONTROL, Patent(s) no. RO128681-A2; RO128681-B1, 2018
2. Low power plasma generator at la low atmospheric pressure - OSIM Bucharest: Patent no. 128077/2016
3. Medical equipment for magnetic therapy with low frequency pulsed magnetic field: OSIM Bucharest: A/10009/2010/ 13 July 2010 (pending);
4. Electrostimulator with digital control for hydrotherapy: OSIM Bucharest: A/00372 , 19.05.2014 (pending)
5. Method and electronic temperature control device for a metalic filament through indirect measurement: OSIM Bucharest: A/00732/2014, 02.10.2014 (pending)

The offer addressed to the economic environment

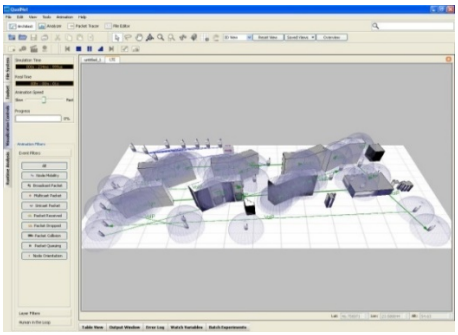
Research & development	Supporting local industry to be more competitively on the market by using applied research.
Consulting	Consultancy and applied research for the industrial or academic environment, according to the skills of the laboratory members: high efficient power supplies, digital control, embedded programming, system modeling and simulation and renewable energy.
Training	Specialized courses according to the skills of the laboratory members: high efficient power supplies, digital control, embedded programming, system modeling and simulation and renewable energy.

CELLULAR AND WIRELESS COMMUNICATIONS RESEARCH LABORATORY

Contact details

Name	**Cellular and Wireless Communications Research Laboratory**
Acronym	**CWL**
Logo	
Site	http://research.utcluj.ro/index.php/domenii-de-cercetare.html
Address	Room 303, 26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technologies** **Department of Communications**
Telephone	+40264401403, +40264591280
Fax	+40264592055
Director	Professor Tudor Palade, PhD
e-mail	Tudor.Palade@com.utcluj.ro





Areas of expertise

Radio network performance, implementation and related services for fixed, mobile and satellite systems:
- radio network planning (satellite, cellular, local, and sensors) and behavior analysis (QoS and QoE) using professional tools (QualNet, EXata, ICS Telecom EV/HTZ communications);

Electromagnetic waves propagation and radio channel characterization:
- radio channel modelling (Matlab), smart antenna arrays / MIMO systems (direction finding and beamforming), RF and microwave propagation, EM field modelling and simulation (AWR Microwave Office); ionospheric propagation monitoring;

Environmental monitoring
- evaluation of electromagnetic pollution; sensor networks for pollution monitoring;

Industrial IoT
- sensor networks for IIoT (redundancy, dual-standard, energy efficiency), modelling and analysis of IIoT sensor networks

Team

Prof. Tudor Palade, Assoc. Prof. Emanuel Puschita, Assist. Prof. Andra Pastrav, Assist. Prof. Paul Dolea, Assist. Cristian Codau

Representative projects

IntraSAT-Tech, **Centre of competence for wireless Intra-SATellite Technologies**, STAR 115/2016, ROSA, 2016-2019.
RDAntenna, **Compact retro-directive wireless antenna network for wireless systems in IEEE 802.11 and IEEE 802.11 communication protocols**, 6 SOL/2017 within PNCDI III, 2017-2020.
SIRIUS, Ionospheric propagation predictions and wide-band communications with SDR sensors in the HF range for emergency informational support in Romania, PCCA, 2014 - 2016.
SIM-SCP, **Implementation of an integrated system for acquisition and transmission of monitoring data from hazardous substances in Cluj**, RO04-0006, SEE Grant, 2015 – 2016.
WiSAT, Wireless Communication Bus for Satellite Applications, ESA (European Space Agency), 2014-2015.
SMANT, **New Algorithms for adaptive/smart antennas in 3G and post-3G communication systems**, PN2, 2007-2010.
RAMA, **Experimental weak radio signals monitor for ionospheric disturbances analysis**, STAR, 2012-2014.
PABMAR, **Integrated wireless platform of local access for broadband and mobility based on self-organizing resources**, PN2, 2007-2010.
COSMOS, **S band mobile satellite communications platform**, PN2, 2007-2010.
CERVIT, **Virtual network IT&C for education and research units geographical spread**, PN2, (2007-2010)
4WARD, **Architecture and design for the future internet"**, FP7-ICT,(2007-2009)
BROADWAN, **Broadband services for everyone over fixed wireless access networks**, FPVI, (2003-2006)

1. **EMBRACE**, **Efficient millimeter broadband radio access for convergence and evolution**, PCV, (1999-2002)
2. **MARCH**, **Multilink architecture for multiply services**, Eureka Cluster Project, (2008-2011).

Significant results

The most representative publications of the past 5 years:

Books

1. Puschita, E., Pastrav, A., Semenciuc, E., Palade, T., Calitatea serviciilor în reţele de telecomunicaţii cu acces radio, ed. a 2-a, Cluj-Napoca, Editura U.T.Press, ISBN 978-606-737-189-5, 320 pagini, 2016

Book Chapters

1. Semenciuc, E., Pastrav, A., Palade, T., Puschita, E., "SDWN for End-to-End QoS Path Selection in a Wireless Network Ecosystem", Future Access Enablers for Ubiquitous and Intelligent Infrastructures, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Volumul 241, p. 134-140, Springer, 2018. (WOS:000481658200020, https://doi.org/10.1007/978-3-319-92213-3_20 , https://link.springer.com/chapter/10.1007/978-3-319-92213-3_20)
2. Pastrav, A., Dolea, P., Puschita, E., Codau, C., Palade, T., Palade, I., "Exposure to UHF Electromagnetic Radiation in Urban Areas", 6th International Conference on Advancements of Medicine and Health Care through Technology, Volume 71, p. 97-101, Springer, 2018. (https://doi.org/10.1007/978-981-13-6207-1_16 , https://link.springer.com/chapter/10.1007%2F978-981-13-6207-1_16)

Research Articles

1. I. Domuta and T. P. Palade, "On-line Estimation of Base Station Location," in IEEE Wireless Communications Letters. 2019 (jurnal ISI, IF=3.546, Q1) https://doi.org/10.1109/LWC.2019.2953848.
2. Puschita, E., Constantinescu, A., Colda, R., Vermesan, I., Moldovan, A., Palade, T. Challenges for a broadband service strategy in rural areas: A Romanian case study, Telecommunications Policy, ISSN: 0308-5961, d.o.i: 10.1016/j.telpol.2013.08.001, vol. 38, issue 2, martie 2014, pp. 147–156. WOS:000335875800003.
3. Pastrav, A., Puschita, E., Palade, T., "Ionospheric Propagation Monitoring and TEC Measurements Using GPStation-6 GNSS Receiver", 11th European Conference on Antennas and Propagation (EuCAP2017), 19-24 2017, Paris, Franța, pp. 3887-3891. WOS:000403827303152. https://doi.org/10.23919/EuCAP.2017.7928814
4. Ratiu, O., Rusu, A., Pastrav, A., Palade, T., Puschita, E., Implementation of an UWB-based Module Designed for Wireless Intra-Spacecraft Communications", Proceedings of 2016 IEEE International Conference on Wireless for Space and Extreme Environments (WiSEE 2016), ISBN: 978-1-5090-2609-8, IEEE Catalog Number: CFP1632U-ART, DOI: 10.1109/WiSEE.2016.7877320, ISBN: 978-1-5090-2609-8, Aachen, Germany, September 26–28, pp. 146-151, 2016. WOS:000405562000027
5. Semenciuc, E., Pastrav, E., Palade, T., Puschita, E., Performance Evaluation of a Cloud-based QoS Support Mechanism, IEEE 11th International Conference on Communications (COMM 2016), Bucharest, Romania, ISBN 978-1-4673-8196-3, doi: 10.1109/ICComm.2016.7528300, June 9-11, 2016, pp. 267- 270. WOS:000383221900051
6. Pastrav, A., Puschita, E., Palade, T., GPStation-6 Employment for GNSS TEC Monitoring in SIRIUS Project, IEEE Catalog Number: CFP1603L-CDR, ISBN 978-1-5090-3748-4, 12th International Symposium on ELECTRONICS AND TELECOMMUNICATIONS (ISETC 2016), DOI: 10.1109/ISETC.2016.7781058, Timişoara, România, Oct 25-26, 2016. WOS:000383221900051

Significant solutions:

1. Optimized models for radio channel using MIMO mechanisms and cognitive radio approaches.
2. Profile and fuzzy-logic based QoS support for wireless access networks.
3. Network planning and performance evaluation of the QoS support (active and passive site survey for WLAN).
4. Wireless sensors network implementation in pollution monitoring systems and industrial IoT.

Products and technologies:

1. Network planning for various radio technologies: satellite links, broadcasting systems, fixed broadband radio links, mobile cellular networks, wireless systems for metropolitan, local and personal use.
2. Professional simulation tools for wireless networks (sensor, local, cellular and satellite) and electromagnetic field analysis in different propagation environments.
3. Evaluation of electromagnetic pollution in urban areas.
4. Wireless sensors networks design, deployment, calibration and maintenance following standards and custom requirements.

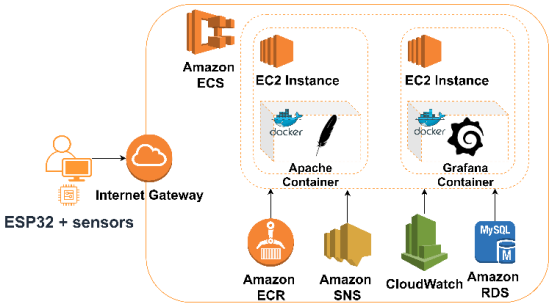
The offer addressed to the economic environment

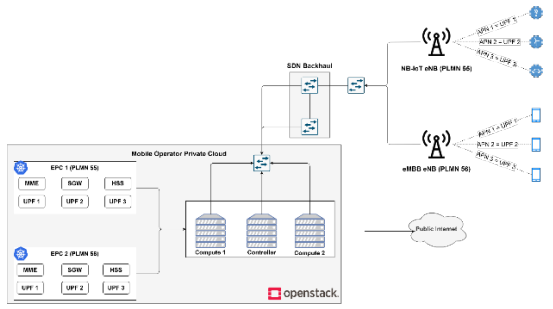
Research & development	Terrestrial and satellite radio channel analysis and modelling. Terrestrial and satellite network architecture optimization. Heterogeneous network planning. Smart antenna arrays using SDR (direction finding, beamforming).
Consulting	Consulting on radio networks planning and optimization for efficient resource allocation, smart antenna design and positioning using adaptive beamforming and direction finding.
Training	**SICAS** Master (Integrated Communication Systems for Special Applications) including: Wireless systems, Interferences and electromagnetic compatibility, Satellite communications systems, Measurement of radio systems, Radio networks planning. http://master-sicas.utcluj.ro

UNIFIED COMMUNICATIONS IN CLOUD

Contact details

Name	**Unified Communications in Cloud Laboratories**
Acronym	**UC Labs**
Logo	UC Labs Unified Communications Laboratories
Site	http://users.utcluj.ro/~uclabs/ https://www.facebook.com/UC-Labs-165153013531719/
Address	26-28 George Baritiu Street, 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technology / Communications Department**
Telephone	+40 264 401226
Fax	+40 264 401916
Director	Professor Virgil Dobrota, Ph.D.
e-mail	Virgil.Dobrota@com.utcluj.ro





Areas of expertise

Telecommunications Networks
Switching and routing; Computer networks; Internet protocols; Unified Communications in Cloud; Software-defined networking; Network security; Cyber-security; Quality of Service in Next-Generation Networks; IoT platforms; DevNet.

Team

Prof. Virgil Dobrota, Ph.D.; Assoc. Prof. Daniel Zinca, Ph.D.; Assist. Prof. Tudor-Mihai Blaga, Ph.D., Assist. Prof. Andrei-Bogdan Rus, Ph.D., Assist. Prof. Iustin-Alexandru Ivanciu, Ph.D.; Gabriel Lazar, Ph.D. student, Calin-Marian Iurian, Ph.D. student; Claudiu Iakkel, Ph.D. student; Gheorghe-Romeo Andreica, Ph.D. student; Robert Botez, Ph.D. student; Catalin-Marian Petruti, Ph.D. student; Maria Salagean (Popescu), Ph.D. student.

Representative projects

EUt+ " European University of Technology", https://www.univ-tech.eu/ (2020-2022)
CLOUDUT "Cloud Cercetare UTCN", Contract No. 235/21.04.2020, POC, MySMIS ID:124493, https://cloudut.utcluj.ro/en/ (2020-2022)
URBIVEL "Advanced Technologies for Intelligent Urban Electric Vehicles", ID P_40_333 project, POC-A1-A1.2.3, https://urbivel.utcluj.ro/ (2016-2020)
DIONASYS "Declarative and Interoperable Overlay Networks, Applications to Systems of Systems", CHIST-ERA project, https://www.dionasys.eu/ (2015-2018)
UCONNECT " Implementation of Ubiquitous Connectivity for Public Transport", FP7-SME-2012-1/315161 project, https://cordis.europa.eu/project/rcn/105670/factsheet/en (2012-2014)
4WARD "Architecture and Design for the Future Internet", FP7-ICT-2007-1 No. 216041 project, https://cordis.europa.eu/project/rcn/85316/factsheet/en (2008-2010)
Wi-QoST "Traffic and QoS Management in Wireless Multimedia Networks", COST 290 project, https://www.cost.eu/actions/290 (2004-2008)

Significant results

The most representative publications of the past 5 years:

1. R. Botez, J. Costa-Requena, I.A. Ivanciu, V. Strautiu, V. Dobrota, "SDN-based Network Slicing Mechanism for a Scalable 4G/5G Core Network: A Kubernetes Approach", Sensors 2021, 21(11), 3773; https://doi.org/10.3390/s21113773, ISSN: 1424-8220, WOS:000660676800001 (ISI Q1 Journal).
2. R. Botez, I.A. Ivanciu, C.M. Iurian, V. Dobrota, "Quantum Implementation of the Modified Dijkstra's Routing Algorithm", Proceedings of the Romanian Academy - Series A, ISSN 1454-9069, Vol. 22, No. 41, January - March 2021, pp. 91-98, Romanian Academy Publishing House, WOS:000635594600011 (ISI Q2 Journal).

3. E. Teshome, D. Deac, S. Thielemans, M. Carlier, K. Steenhaut, A. Braeken, V. Dobrota, “Time Slotted Channel Hopping and ContikiMAC for IPv6 Multicast Enabled Wireless Sensor Networks”, Sensors 2021, 21(5), 1771; https://doi.org/10.3390/s21051771, ISSN: 1424-8220, WOS:000628863900001 (ISI Q1 Journal).
4. A. Cepuc, R. Botez, O. Craciun, I.A. Ivanciu, V. Dobrota, “Implementation of a Continuous Integration and Deployment Pipeline for Containerized Applications in Amazon Web Services Using Jenkins, Ansible and Kubernetes”, Proc. of the 19th RoEduNet Conference: Networking in Education and Research, PUB Bucharest, Romania, Dec.11-12, 2020, pp.1-6, DOI: 10.1109/RoEduNet51892.2020.9324857, WOS:000654265900011.
5. C.M. Iurian, I.A. Ivanciu, B.M. Marian, D. Zinca, V. Dobrota, “An SDN Architecture for IoT Networks Using ONOS Controller”, Proc. of the 19th RoEduNet Conference: Networking in Education and Research, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-6, DOI: 10.1109/RoEduNet51892.2020.9324887, WOS:000654265900035.
6. M. Csoma, B. Kone, R. Botez, I.A. Ivanciu, A.D. Kora, V. Dobrota, “Management and Orchestration for Network Function Virtualization: An Open Source MANO Approach”, Proc. of the 19th RoEduNet Conference: Networking in Education and Research, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-6, DOI: 10.1109/RoEduNet51892.2020.9324847, WOS:000654265900002.
7. G.R. Andreica, L. Bozga, D. Zinca, and V. Dobrota, “Denial of Service and Man-in-the-Middle Attacks against IoT Devices in a GPS-based Monitoring Software for Intelligent Transportation Systems”, Proc. of the 19th RoEduNet Conference: Networking in Education and Research, PUB Bucharest, Romania, Dec.11-12, 2020, pp. 1-4, DOI: 10.1109/RoEduNet51892.2020.9324865, WOS:000654265900017.
8. C.M. Iurian, I.A. Ivanciu, and V. Dobrota, “Couchbase Server in Microsoft Azure Cloud: A Docker Container Approach”, Proc. of the 14th Intl. Symposium on Electronics and Telecommunications ISETC 2020, Timisoara, Romania, November 5-6, 2020, pp. 1-4, DOI: 10.1109/ISETC50328.2020.9301052, WOS:000612681000084.
9. I.A. Ivanciu, L. Ivanciu, D. Zinca and V. Dobrota, “Securing Health-Related Data Transmission Using ECG and Named Data Networks”, Proceedings of the 25th IEEE Intl. Symp. on Local and Metropolitan Area Networks LANMAN 2019, Paris, France, July 1-3, 2019, DOI: 10.1109/LANMAN.2019.8846993, WOS:000617951400007.
10. C.M. Petruti, B.A. Puiu, I.A. Ivanciu, and V. Dobrota, “Automatic Management Solution in Cloud Using NtopNG and Zabbix”, Proc. of the 17th RoEduNet Conference: Networking in Education and Research, Cluj-Napoca, Romania, Sept. 6-8, 2018, pp. 148-153, DOI: 10.1109/ROEDUNET.2018.8514142, WOS:000517570500020.
11. E. Luchian, A. Taut, I.A. Ivanciu, G. Lazar, and V. Dobrota, “Z-Wave-Based Vehicular Blackbox with Automatic Emergency Assistance”, Proceedings of the 24th IEEE International Symposium on Local and Metropolitan Area Networks LANMAN 2018, Washington, DC, USA, 25-27 June 2018, pp.85-90, DOI: 10.1109/LANMAN.2018.8475110, WOS:000447699400015.
12. E. Luchian, A. Taut, I.A. Ivanciu, G. Lazar, V. Dobrota, “Mobile Wireless Sensor Network Gateway: A Raspberry Pi implementation with a VPN backend to OpenStack”, Proceedings of the 25th International Conference on Software, Telecommunications and Computer Networks IEEE SOFTCOM 2017, Split, Croatia, September 21-23, 2017, pp. 271-275, DOI: 10.23919/SOFTCOM.2017.8115561, WOS:000417414300050.
13. R. Carvajal Gomez, E. Luchian, I.A. Ivanciu, A. Taut, V. Dobrota, and E. Riviere, “On the Impact of Indirect WAN Routing on Geo-Replicated Storage”, 23rd IEEE International Symposium on Local and Metropolitan Area Networks LANMAN 2017, Osaka, Japan, 12-14 June 2017, pp. 1-6, Electronic ISSN: 1944-0375, DOI: 10.1109/LANMAN.2017.7972171, WOS:000426966200043.

Significant solutions:

SDN-based Network Slicing Mechanism for a Scalable 4G/5G Core Network; Quantum computing implementation of Modified Dijkstra’s Algorithm; Seamless Connectivity for Intra/ Inter-Cloud Applications; Automatic Deployment of Infrastructure and Services for a Private Cloud Orchestrated by OpenStack; Active Measurements of the One-Way Delay; Gearbox-Like Routing Algorithm Selection in Runtime.

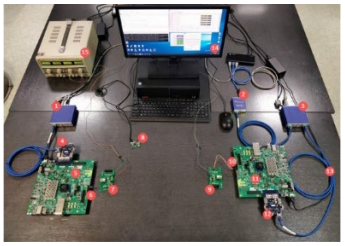
The offer addressed to the economic environment

Research & development	SDN and NFV implementations based on Kubernetes; Development of active measurements of QoS parameters in Internet (available transfer rate, latency); Development of cross-layer techniques for congestion control; Development of a solution for permanent Internet connection independent to the network access technologies; Development of implementation for automatic management in cloud; Extension of libtins library for a packet-based VoIP analyser and an Intrusion Detection System.
Consulting	Consulting, design, research and prototyping towards development of private cloud solutions; Evaluation of security vulnerabilities in computer networks and operating systems; IP-based solution for unified communications; DevNet solutions.
Training	Cisco Networking Academy programs offered by UC Labs staff: http://el.el.obs.utcluj.ro/cisco/ CCNA: Introduction to Networks (IN), version 7.02; CCNA: Routing, Switching and Wireless Essentials (RSWE), version 7.02; CCNA: Enterprise Networking, Security and Automation (ENSA), version 7.02; IoT Fundamentals: IoT Security, version 1.1; CyberOps Associate, version 1.02; CCNA Security version 2.02; DevNet Associate, version 1.01;

CENTRE OF COMPETENCE FOR WIRELESS INTRA-SATELLITE TECHNOLOGIES

Contact details

Name	**Centre of competence for wireless Intra-SATellite Technologies**
Acronym	**IntraSAT-Tech**
Logo	IntraSAT-Tech
Site	https://intrasat-tech.utcluj.ro/
Address	Room 433, 15 Constantin Daicoviciu Str., 400020, Cluj-Napoca, Romania
Faculty Department	**Faculty of Electronics, Telecommunications and Information Technologies** **Department of Communications**
Telephone	+40264401285
Fax	+40264592055
Director	Professor Tudor Palade, PhD
e-mail	Tudor.Palade@com.utcluj.ro




Areas of expertise

Satellite communications and radio channel characterization: Wireless intra-satellite communications, smart site diversity for High Throughput Satellite (HTS) systems, advanced atmospheric channel modelling; Q/V band (40-50 GHz) propagation analysis for next generation satellite communication systems and fading mitigation, space surveillance and tracking, Global Navigation Satellite Systems (GNSS).
Intra-satellite wireless communications: Transmissions in highly reflective environments, replacement of wired connections with wireless UWB links, development of software interfaces to bridge the On-Board Computer-to-instrument connection, validation tests on dedicated laboratory testbed (TRL4).
Wireless positioning and location: GNSS and indoor positioning
Smart antenna arrays deployment: SDR-based direction finding and beamforming**.**

IntraSAT-Tech received an award (with the "ROSA – ROMANIA 100" medal) from the Romanian Space Agency (ROSA) for the significant contributions in the development of the Romanian spatial activities.


rosa
agenția spațială română
ACORDĂ
DIPLOMA
UT Cluj Napoca Intra SAT-Tech
pentru contribuții deosebite la dezvoltarea activităților spațiale în România
Se acordă împreună cu Medalia Omagială "ROSA - ROMÂNIA 100"
Decembrie 2018, București, România
Președinte
Dr. fiz. Marius - Ioan PISO

Team

Prof. Tudor Palade, Prof. Calin Munteanu, Prof. Catalin Popa, Prof. Ovidiu Pop, Assoc. Prof. Emanuel Puschita, Assoc. Prof. Botond Kirei, Assist. Prof. Andra Pastrav, Assist. Prof. Paul Dolea, Assist. Cristian Codau, Research Assist. Rares Buta, Research Assist. Raluca Simedroni

Representative projects

3. **SDR4SST**, **SDR based multi feed reception system for SST**, AO8856 EXPRO-PLUS, ESA 4000128680/19/D/CT, 2019-2021.
4. **IntraSAT-Tech**, **Centre of competence for wireless Intra-SATellite Technologies**, STAR 115/2016, ROSA, 2016-2019, https://intrasat-tech.utcluj.ro/drupal/node/2
5. **RDAntenna**, **Compact retro-directive wireless antenna network for wireless systems in IEEE 802.11 and IEEE 802.11 communication protocols**, 6 SOL/2017 within PNCDI III, 2017-2020, https://intrasat-tech.utcluj.ro/drupal/RDAntenna
6. **ASAPE**, **Group of the AlphaSat Aldo Paraboni propagation Experimenters**, Open forum of researchers performing propagation campaigns with the Aldo Paraboni payload and other satellite payloads at Ka band.

Significant results

Research Articles (The most representative publications of the past 5 years):

3. Puschita, E, Pastrav A, Palade T, et al., "A UWB Solution for Wireless Intra-Spacecraft Transmissions of Sensor and SpaceWire Data", International Journal of Satellite Communications and Networking, John Wiley & Sons, Ltd., p. 1–21, 2019 (jurnal ISI, IF=1.633, Q2). https://doi.org/10.1002/sat.1307.
4. Pastrav, A., Palade, T., Dolea, P., Simedroni, R., Codau, C., Puschita, E., "The Alphasat Experiment at Cluj-Napoca – Preliminary Results," 2018 International Symposium on Electronics and Telecommunications (ISETC), Timisoara, 2018, pp. 1-4. WOS:000463031500051. https://doi.org/10.1109/ISETC.2018.8583877.
5. Pastrav, A., Codau, C., Puschita, E., Dolea, P., Palade, T., "Conceptual Architecture of a Retrodirective Antenna System with Beamforming Capabilities," 2018 International Conference on Communications (COMM), Bucuresti, 2018, pp. 225-230. WOS:000449526000041. https://doi.org/10.1109/ICComm.2018.8484740.
6. Codău C., Voina, A., Pastrav, A., Palade, T., Puschita, E., Hedesiu, H., Chirap, C., "Experimental evaluation of the IEEE 802.11ac standard using NI USRP 2954R," 2017 16th RoEduNet Conference: Networking in Education and Research (RoEduNet), Targu Mures, 2017, pp. 1-6. WOS:000425040000037 https://doi.org/10.1109/ROEDUNET.2017.8123765 .
7. Voina, A., Codău C., Pastrav, A., Palade, T., Puschita, E., Hedesiu, H., Chirap, C., "Implementation of a SDR-based redundant access network using NI USRP-RIO," 2017 16th RoEduNet Conference: Networking in Education and Research (RoEduNet), Targu Mures, 2017, pp. 1-6. WOS:000425040000036. https://doi.org/10.1109/ROEDUNET.2017.8123764.
8. Rares, B., Codau, C., Pastrav, A., Palade, T., Hedesiu, H., Balauta, B., Puschita, E., "Experimental Evaluation of AoA Algorithms using NI USRP Software Defined Radios," 2018 17th RoEduNet Conference: Networking in Education and Research (RoEduNet), Cluj-Napoca, 2018, pp. 1-6. https://doi.org/10.1109/ROEDUNET.2018.8514133.
9. Codău, C., Buta, R., Palade, T., Păstrăv, A., Dolea, P., Simedroni, R., Puschita E., "Experimental Evaluation of a Beamforming-capable System using NI USRP Software Defined Radios," 2019 18th RoEduNet Conference: Networking in Education and Research (RoEduNet), Galati, Romania, 2019, pp. 1-6. doi: 10.1109/ROEDUNET.2019.8909456.
10. I. Domuta and T. P. Palade, "Sliding DFT and Zero Padding," 2019 42nd International Conference on Telecommunications and Signal Processing (TSP), Budapest, Hungary, 2019, pp. 154-157. doi: 10.1109/TSP.2019.8769076.

Case Study (National Instruments)

1. Direction-Finding System Deployment Based on the NI Platform, Buta, R., Codau, C., Pastrav, A., Palade, T., Dolea, P., Hedesiu, H., Balauta, B., Chirap, C., Puschita, E., Radiocommunications Research Group, Communications Department, Technical University of Cluj-Napoca and National Instruments Romania [Available online]: http://sine.ni.com/cs/app/doc/p/id/cs-17758?nisrc=RSS-featured-en

Significant solutions:

1. FPGA-based intra-satellite wireless communication modules designed to interconnect intra-spacecraft components.
2. Software communication stack for encapsulation of the SpaceWire packets.
3. SpW-to-UART bridge to interface On-Board Computer (OBC), payload and instrumentation.
4. Localization and positioning solution, smart antenna arrays for direction finding and beamforming.

The offer addressed to the economic environment

Research & development	Terrestrial, satellite and intra-satellite radio channel analysis and modelling. High Throughput Satellite network planning and behavior analysis through simulation. Adaptive beamforming techniques and MIMO systems applications.
Consulting	Consulting on satellite systems and radio channel modeling for intra-satellite and Earth-to-satellite communications, smart antenna design, adaptive beamforming, and direction finding.
Training	**SICAS** Master (Integrated Communication Systems for Special Applications) including: Wireless systems, Interferences and electromagnetic compatibility, Satellite communications systems, Measurement of radio systems, Radio networks planning. http://master-sicas.utcluj.ro

NATIONAL CENTRE OF INNOVATIVE MANUFACTURING

Contact details

Name	**National Centre of Innovative Manufacturing**
Acronym	**FABRIN**
Logo	
Site	http://www.tcm.utcluj.ro
Address	103-105 Muncii Av., Room: G14; B07; G19; C04; M201, M203; B05; B06; G15; C 03, 400641Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building** **Manufacturing Engineering Department**
Telephone	+40264 401614, +40264 415653
Fax	+40 264 415653
Director	Prof. Dr. Eng. Petru Berce
e-mail	Petru.Berce@tcm.utcluj.ro

Areas of expertise

Industrial Engineering (Laser Beam Machining, Water Jet Cutting, Electrical Discharge Machining, Rapid Prototyping of complex parts and master models for Rapid Tooling, etc.); **Flexible Manufacturing Systems** (CNC Manufacturing Systems); **CAD/CAM Systems** (Applied Industrial design for products and technologies); **Production Engineering** (Innovative Manufacturing for product development and Rapid Tooling technologies); **Automotive Engineering** (Competitive Manufacturing of car components); **Composite Materials** (Manufacturing technologies of complex parts made out of composite materials enforced with carbon fiber); **Engineering and Technologies** (Concurrent engineering, Methodologies and Software tools in Design for Manufacture and Assembly); **Biomedical engineering**, (Prototypes, customized implants, new biocompatible materials); **Operational Research**. Development of algorithms for solving TSP, Flowshop Scheduling, Optimal Nesting etc. **Technology Processes Optimization Development of algorithms** for linear and nonlinear optimization, without/with constraints.

Team

Prof. Dr. Eng. Petru Berce, Prof. Dr. Eng. Nicolae Bâlc, Prof. Dr. Eng. Mircea Ancău, Prof. Dr. Eng. Domniţa Frăţilă Assoc.Prof. Dr. Eng. Mihai Damian, Assoc.Prof. Dr. Eng. Alexandru Cărean,, Assoc.. Prof. Dr. Eng. Răzvan Păcurar Assist. Prof. Dr. Eng. Cristian Caizar, Assist. Prof. Eng. Horea Chezan, Assist., Assist. Prof. Dr. Eng. Radu Sever Adrian, Assist. Prof. Dr. Eng. Ancuţa Păcurar, Assoc.. Prof. Dr. Eng Dan Leordean, Assoc.. Prof. Dr. Eng Paul Bere, Assoc.. Prof. Dr. Eng. Nicolae Panc, Assoc.. Prof. Dr. Eng. Emilia Sabă. Assoc.. Prof. Dr. Eng Alexandru Popan, Assoc.. Prof. Dr. Eng Alina Luca

Representative projects

DigiTech – "Implementation of additive technologies in complex and overbuilt components manufacturing", PNIII-P1-1.2 PCCDI 2018, (2018-2021)
"**AMaTUC – Boosting the scientific excellence and innovation capacity in additive manufacturing of the Technical University of Cluj-Napoca**", HORIZON 2020 – twinning, 2016-2018
"Research concerning the development of new stochastic heuristic algorithms for solving flowshop scheduling problems",PNII-Idei,http://www.ci579.utcluj.ro (2008-2011)
"**Expert Systems for Technology Processes Optimization. The research contracts deals with rapid prototyping and tooling optimization"**, PNII, http://www.esop.utcluj.ro (2007-2010)
Adm-ERA, **"Reinforcing Additive Manufacturing research cooperation between the Central Metallurgical Research and Development Institute and the European Research Area"**, European FP7 Project, (2011-2013)

BIOMAPIM, **"New Biocompatible Materials for personalized implants made by SLS and SLM"**, PCCE, (2010-2013)
OP3MET, **"Optical 3D Metrology - Automated in-line metrology for quality assurance in the manufacturing industry"**, European FP6 Project, (2006-2008)
"Innovative Manufacturing Network", (2005-2008)

Significant results

The most representative publications of the past 5 years:

1. Pacurar, R.; Berce, P.; Petrilak, A.; Neme¸s, O.; Borzan, C. ¸S.M.; Harnicárová, M.; Pacurar, A. Selective Laser Melting of PA 2200 for Hip Implant Applications: Finite Element Analysis, Process Optimization, and Morphological and Mechanical Characterization. Materials 2021, 14, 4240. https://doi.org/10.3390/ma14154240 (ISI-Q1, IF: 3,623)
2. O. Jucan, R. Gadalean, H. Chicinas, M. Hering, N. Balc, C. Popa, "Study on the indirect selective laser sintering (SLS) of WC-Co/PA12 powders for the manufacturing of cemented carbide parts", International Journal of Refractory Metals and Hard Materials, Elsevier, Volume: 96, 2021, (ISI-Q1, FI: 3.407); https://doi.org/10.1016/j.ijrmhm.2021.105498;
3. Cosma, C; Drstvensek, I; Berce, P; Prunean, S.; Legutko, S; Popa, C.; Balc, N; „Physical-Mechanical Characteristics and Microstructure of Ti6Al7Nb Lattice Structures Manufactured by Selective Laser Melting", MATERIALS, Volume: 13 Issue: 18, 2020. Article Number: 4123, DOI:10.3390/ma13184123,
4. Perini, M; Bosetti, P; Balc, N," Additive manufacturing for repairing: from damage identification and modeling to DLD", Rapid Prototyping Journal, Publisher: Emerald Group Publishing LTD, UK, Volume: 26, Issue 5, ISSN: 1355-2546 / eISSN: 1758-7670, DOI: 10.1108/RPJ-03-2019-0090, Published 2020, Q1-FI: 3.937;
5. Armencea, G., Cosma, C., Dinu, C., Onisor, F., Lazar, M., Berce, P., Balc, N., Baciut, M., Bran, S., Technical queries of a 3D design custom-made implant made from titanium particles for maxillofacial bone reconstruction, Particulate Science and Technology, Volume: 38 Issue 6 Pages 676-684, TAYLOR & FRANCIS INC, ISSN: 0272-6351, DOI: 10.1080/02726351.2019.1578846, Published 2020, Q3- FI=1.619
6. Todea, M.; Vulpoi, A.; Popa, C.; Berce, P., et al., Effect of different surface treatments on bioactivity of porous titanium implants, JOURNAL OF MATERIALS SCIENCE & TECHNOLOGY Volume: 35 Issue: 3 Pages: 418-426 Published: MAR 2019
7. Petru Berce, et. al., „Medical applications of Additive Manufacturing technologies", *Romanian Academy Publishing House*, Bucharest, 2015
8. Leordean, Dan; Dudescu, Cristian; Marcu, Teodora; P. Berce et al "Customized implants with specific properties, made by selective laser melting" *RAPID PROTOTYPING JOURNAL* Volume: 21 Issue: 1 Pages: 98-104, Published: 2015
9. Leordean, Dan; Radu, S. A.; Fratila, D.; P. Berce, "Studies on design of customized orthopedic endoprostheses of titanium alloy manufactured by SLM", *INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY* Volume: 79 Issue: 5-8 Pages: 905-920 Published: JUL 2015
10. Petru Berce, et.al., „Additive Manufacturing Technologies and their applications", *Academy Publishing House*, Bucharest, 2014.

International Patent: "Acting Device", registered in USA and Germany;
Others:
Competitive Manufacturing techniques transferred to industrial partners and used in commercial contracts with companies from Germany and England

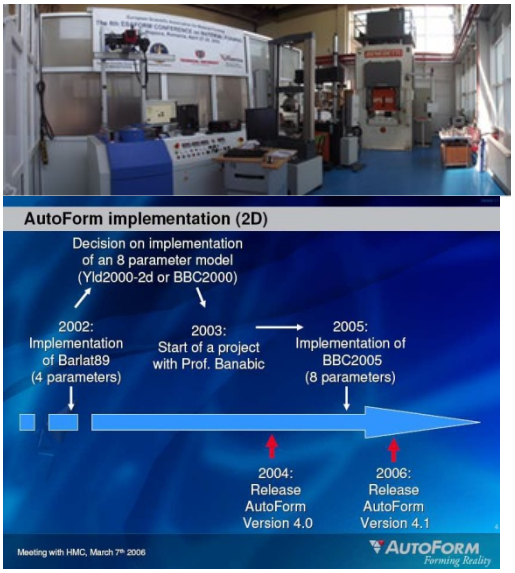
The offer addressed to the economic environment

Research & development	Develop new materials, suitable for Rapid Prototyping using the SLS and SLM equipment. Development of optimization algorithms. Design for Competitive Manufacturing of Industrial Products. Rapid Tooling and Additive Manufacturing Rapid Prototyping using the well known CNC machines, available within DME-TUCN. Researches concerning the technological processes optimization.
Consulting	External evaluation of products/projects; Select the optimal RP technological route; Consulting in the area of operational research (industrial application of combinatorial optimization: calculation of minimum path length, optimal nesting, flowshop scheduling etc.).
Training	We offer training in the field of Numerical Optimization Techniques in Computer Aided Design. Training for people from industry, in the following fields: Use modern CAD systems for integrated applied design; Rapid Tooling; Modern Manufacturing Technologies; Using the modern RP equipment; CNC machining; Metrology and Quality Engineering.

RESEARCH CENTRE IN SHEET METAL FORMING-CERTETA

Contact details

Name	**Research Centre in Sheet Metal Forming**
Acronym	**CERTETA**
Logo	CERTETA
Site	www.certeta.utcluj.ro
Address	103-105 Muncii Av., Cluj Napoca, Romania
Faculty Department	**Faculty of Industrial Engineering, Robotics and Management of Production** **Manufacturing Engineering Department**
Telephone	+40 264 401733 Mobile: +40 744704006
Fax	+40 264 415603
Director	Prof. Dr. Eng. Dorel Banabic
e-mail	banabic@tcm.utcluj.ro



Areas of expertise

The main areas of our scientific interest and activity are:
Modelling of the material behavior
Formability of metallic materials
Simulation of the sheet and tube metal forming processes
Virtual fabrication in metal forming

Team

Prof. Dr. Eng. Dorel Banabic, Assoc. Prof. Dr. Eng. Dan-Sorin Comșa, Assoc. Prof. Dr. Eng. Lucian Lăzărescu

Representative projects

Analysis of formability and mechanical behavior of metallic materials – research contract with FONTANA Pietro SPA Italy (2018)
"From micro to macro - continuum scale modelling of advanced materials in virtual fabrication", PNII, (2009-2013)
"Holistic, extensible, scalable and standard Virtual Factory Framework", European FP7 Project, (2009-2013)
"Sheet metal formability for special metal forming processes", Humboldt Foundation (Joint Research Project), (2005-2008)
"Improvement of performances of formability models for sheet metals using new constitutive laws", Swiss National Science Foundation (Joint Research Project), (2005-2008)
VIRFAB, **"Integrated platform for the simulation of forming processes in virtual manufacturing"**, CEEX, (2006-2008)
VIF, **"Virtual Intelligent Forging"**, European FP6 Project, (2004-2008)

Significant results

Books and contribution to books:
1. Lăzărescu L., Comşa D.S., Banabic D., Analiza cu elemente finite a proceselor de prelucrare prin deformare plastică, Casa Cărţii de Ştiinţă, Cluj Napoca, 2018
2. Lăzărescu L., Comşa D.S., Banabic D., Proiectarea tehnologiilor si a matritelor pentru prelucrarea tablelor metalice, Casa Cărţii de Ştiinţă, Cluj Napoca, 2018.
3. Frangopol P., Banabic D., David D., Educaţia şi cercetarea românească. Starea prezentă şi perspectiva, Casa Cărţii de Ştiinţă, Cluj Napoca, 2018.
4. Banabic D., Balan T., Comsa D.S., Anisotropic Yield Criteria for Aluminum Alloy Sheets, In: Encyclopedia of Aluminium and its Alloys (ed. Totten G.E.), CRC Press, New York, 2019.
5. Banabic D., Comsa D.S., "BBC2005 yield criterion used in the numerical simulation of sheet metal forming processes", In: (Ed.:Tekkaya E.A.), 60 Excellent Inventions in Metal Forming), *Springer, Heidelberg Berlin*, 2015
6. Banabic D., Lazarescu L., Comsa D.S., "An innovative procedure for the experimental determination of the Forming Limit Curves", In: (Ed.:Tekkaya E.A.), 60 Excellent Inventions in Metal Forming), *Springer, Heidelberg Berlin*, 2015
7. D. Banabic, "Sheet Metal Forming Processes", in *Science Press*, Beijing, 2015

The most representative publications of the past 5 years:
1. D. Lumelskyj, J. Rojek, L. Lazarescu, D. Banabic, Determination of forming limit curve by finite element method, Procedia Manufacturing, 27 (2019), 78–82.

2. Banabic D., Barlat F., Cazacu O., Kuwabara T., Advances in Anisotropy of Plastic Behaviour and Formability of Sheet Metals, International Journal of Materials Forming, (13(2020) (IF=1,75)
3. Banabic D., Kami A., Comsa D.S., Eyckens P., Developments of the Marciniak-Kuczynski Model for Sheet Metal Formability: a Review, Journal of Materials Processing Technology (Special Issue in Honor of Prof. Marciniak), (2020) (IF=4,178).
4. Da-Yong Chen, Yong Xu, Shi-Hong Zhang, Yan Ma, Ali Abd El-Aty, Dorel Banabic, Artur I. Pokrovsky, Alina A. Bakinovskaya, A novel method to evaluate high strain rate formability of sheet metals under impact hydroforming, Journal of Materials Processing Technology, (2020) (IF=4.178)
5. Lucasz Madej, Dorel Banabic, 100th birthday of Professor Zdzisław Marciniak, Journal of Materials Processing Technology, (2020) (IF=4.178)
6. Weihao Jiang, Wenlong Xie, Hongwu Song, Lazarescu Lucian, Shihong Zhang, Dorel Banabic, A modified thin-wall tube push-bending process with polyurethane mandrel, International Journal of Advanced Manufacturing Technology, (2020)
7. Chun-Qing Hu, Hong-Wu Song, Hai Liu, D. Banabic, Shi-Hong Zhang, Ming Cheng, Shuai-Feng Chen, *A statistical model for contact orientation and anisotropy in granular assemblies*, Proceedings of the Romanian Academy, Series A, 19(2018), Nr.2, 175-183
8. Ma, Yan; Xu, Yong; Zhang, Shi-Hong; et al., Investigation on formability enhancement of 5A06 aluminium sheet by impact hydroforming CIRP ANNALS-MANUFACTURING TECHNOLOGY Volume: 67 Issue: 1 Pages: 281-284 Published: 2018
9. A. Kami, B. M. Dariani, A. S. Vanini, D.S. Comsa, D. Banabic, Numerical determination of the forming limit curves of anisotropic sheet metals using GTN damage model, in *J. Materials Proc. Technol.*, 216 (2015) 472–483.
10. J. Gawad, D. Banabic, A. v.Bael, D. S. Comsa, M. Gologanu, P. Eyckens, P. v. Houtte, D. Roose, "An evolving plane stress yield criterion based on crystal plasticity virtual experiments", in *Int. J. Plasticity*, vol. 75, 2015, pp.141-169.
11. M. Vrh, M. Halilovič, B. Starman, B. Štok, D. S. Comsa, D. Banabic, "Capability of the BBC2008 yield criterion in predicting the earing profile in cup deep drawing simulations", in *European J. of Mechs.*, vol. 45, 2014, pp. 59-74.
12. S. Bruschi, T. Altan, D. Banabic, P. F. Bariani, A. Brosius, J. Cao, A. Ghiotti, M. Khraisheh, M. Merklein, E. Tekkaya, "Testing and Modeling of Material Behavior and Formability in Sheet Metal Forming Processes", in *Annales of CIRP*, vol. 63, 2014, pp. 727-749.

Significant solutions:

The members of the CERTETA Centre developed a yield criterion for anisotropic metallic materials called BBC2005. Its mathematical formulation has been implemented in the commercial finite element code AutoForm in order to simulate the sheet metal forming processes. One may notice the fact that the AutoForm program is used by 95% of the world's leading manufacturers of automobiles and airplanes, which assures a global scale application of the model BBC2005. This means that the model is applicable at the global scale and CERTETA Centre is visible in automotive and airplane production industries (according to the AutoForm official site www.AutoForm.com, over 2500 users from 500 companies located in 40 countries). The Material Modelling Committee of the Japan Association for Nonlinear CAE (JANCAE) has recently developed a unified user-subroutine (called UMMDp, Unified Material Model Driver for Plasticity), which couple different hardening rules and yield functions, including BBC 2005 and BBC2008 models developed by the CERTETA team. This subroutine can be used within any commercial FE software (Abaqus, LsDyna, ANSYS, MSC Marc, Radioss) by using the unified interface routine.

Other remarkable results consist in the fact that CERTETA developed a program for the calculation the forming limit curves, called FORM-CERT. This program is used by several automotive companies (Daimler, Audi, etc.).

The third major achievement consists in the development of a model for the prediction of Forming Limit Bands. In this research field, CERTETA is a pioneering laboratory at international level.

Products and technologies:

The yield criteria developed in order to describe the plastic anisotropic behavior of the metallic sheets. The BBC2005 yield criterion has been implemented in the AutoForm FE commercial code and in the UMMPd user subroutine.

Hierarchical Multi-Scale (HMS) model coupled with BBC2008 yield criterion.

FORM-CERT commercial program for the determination the forming limit curves.

Technology and expertise to determine the mechanical parameters of the metallic sheets

The offer addressed to the economic environment

Research & development	CERTETA currently develops constitutive models for anisotropic metallic materials, with special emphasis on cold-rolled sheet metals. The theoretical prediction of the forming limits is also an important domain of research. The models are developed with the aim of being implemented in the programmes used for the numerical simulation of the forming processes and computer-aided design of the forming tools. The members of the CERTETA are also involved in the development of experimental methods for the determination of the mechanical parameters and limit strains of metallic sheets.
Consulting	The research centre provides consulting services in the field of materials testing, numerical simulation of the sheet metal forming processes, and computer-aided design of forming tools.
Training	The research centre offers training courses in the field of numerical simulation of the metal forming processes using finite element programmes. The members of team have also a sound expertise in the field of metal forming procedures and their implementation in industry.

RESEARCH CENTER FOR INDUSTRIAL ROBOTS SIMULATION AND TESTING

Contact details

Name	**Research Center for Industrial Robots Simulation and Testing**
Acronym	**CESTER**
Logo	CESTER
Site	www.cester.utcluj.ro
Address	103-105 Muncii Ave., Room C309, Cluj-Napoca
Faculty Department	Machine Building Faculty Mechanical Systems Engineering Department
Telephone	+40 264 401684
Fax	+40 264 401765
Director	Prof. Dr. Eng. Doina Pisla
e-mail	doina.pisla@mep.utcluj.ro

Areas of expertise

Innovative development of robotic systems with complex structure, focused on parallel architectures
Medical robots: surgical robots, robots for cancer treatment, robots for cancer diagnosis, robots for rehabilitation
Simulation and Control of complex robotic systems
Robotic telemanipulation systems
Modeling and simulation of mechatronic systems with applications in aerodynamics and fluid flow or fluid modeling and simulation

Team

Prof. Dr. Eng. Doina Pisla, Prof. Dr. Eng. Nicolae Plitea, Assoc. Prof. Dr. Eng. Bogdan Gherman, Assoc. Prof. Dr. Eng. Calin Vaida, Prof. Dr. Eng. Tiberiu Antal, Prof. Dr. Eng. Tiberiu Itul, Prof. Dr. Eng. Adrian Pisla, Lecturer Dr. Eng. Paul Tucan, Dr. Eng. Iosif Birlescu, Lecturer Dr. Eng. Daniela Jucan, Assoc. Prof. Dr. Eng. Dan Frunza, Prof. Dr. Eng. Dan Opruta, Prof. Dr. Eng. Liviu Vaida, Assoc. Prof. Dr. Eng. Angela Plesa

Representative projects

IMPROVE, "Innovative approach precision on robotic assisted surgical treatment of liver tumors based on integrated diagnostic imaging molecular", Code PN-III-P1-1.2-PCCDI 2018, (2018-2020)
AGEWELL, "Innovative approaches rehabilitation and Asssistive Robotics for Healthy Ageing", POC project ID 37_215, MySMIS code 103415, (2016-2020)
INNOHEALTH, "An innovative robotic system for upper limb rehabilitation", RIS 2019 Innovation Call, 21540/07.08.2019, EIT Health (2019)
TASUK, "Manipulation Systems for Sample Handling in a Sample Receiving Facility", TASUK/16/11305/NBO/1424, ESA European Space Agency (2015-2020)
ROBOCORE, "Robotic assisted prostate biopsy, a high accuracy innovative method", Code PN-II-PT-PCCA-2013-4-0647 (2014-2017)
ACCURATE, "A multi-purpose needle insertion device for the diagnosis and treatment of cancer", Code PN-II-RU-TE- 2014-4-0992, (2015-2017)
IOS, "Instructor Operation Station designed for space applications", RDI, Romanian Space Agency (2014-2015)
CHANCE, "Robotic assisted brachytherapy, an innovative approach of inoperable cancers", Code PNII-PT-PCCA, (2012-2015)
CARE-Robotics, "Creative Alliance in Research and Education focused on Medical and Service Robotics", International, Scopes IP Grant, (2011-2015)
SIMCOSURG, "Simulation and control techniques for robots used in minimally invasive surgery", Capacities, Module III, bilateral cooperation, Slovenia-Romania (2011-2013)

PROINS, "Development of innovative kinematic and dynamic models for parallel robots in surgical applications", Capacities, Module III, bilateral cooperation, Austria – Romania (2011-2013)
HEPSIM, "Innovative development of an innovative virtual system for e-learning in hepatic surgery", PNII, (2008-2011)
PARMIS, "Multidisciplinary development of surgical robots based on parallel structures", PNII, (2007 - 2010)

Significant results

The most representative publications of the past 5 years:
1. Vaida, C., Birlescu, I., Pisla, A., Ulinici I., Tarnita, D., Carbone, G., Pisla, D., "Systematic Design of a Parallel Robotic System for Lower Limb Rehabilitation", IEEE ACCESS, vol. 8, 34522(15), 2020 (Impact factor: 4.098)
2. Tucan P., Gherman B., Major K., Vaida C., Major Z., Plitea N., Carbone G., Pisla D., "Fuzzy Logic Based Risk Assessment of a Parallel Robot for Elbow and Wrist Rehabilitation", Int. J. Environ. Res. Public Health, 17(2), 654, 2020 (Impact Factor: 2.468)
3. Pisla D., Vaida, C., Birlescu I., Nadim, A.H., Gherman, B., Corina Radu, Plitea N., "Risk Management for the Reliability of Robotic Assisted Treatment of Non-resectable Liver Tumors", Appl. Sci., 10(1), 52, 2020, (Impact Factor: 2.217)
4. Birlescu I., Manfred, H., Vaida C., Plitea N., Nayak A., Pisla, D., "Complete Geometric Analysis Using the Study SE(3) Parameters for a Novel, Minimally Invasive Robot Used in Liver Cancer Treatment", Symmetry, 11(12), 1491, 2019 (Impact factor: 2.143)
5. Tucan P., Vaida C., Plitea N., Pisla A., Carbone G., Pisla D., "Risk-Based Assessment Engineering of a Parallel Robot Used in Post-Stroke Upper Limb Rehabilitation", Sustainability 11(10), 2893, 2019, (Impact factor: 2.075)
6. Gherman, B., Birlescu, I., Plitea, N., Carbone, G., Tarnita, D., Pisla, D., "On the singularity-free workspace of a parallel robot for lower-limb rehabilitation", Proceedings of The Romanian Academy, Series A, 20(4), pp. 383–391. 2019 (Impact factor: 1.402)
7. Pisla, D.; Birlescu, I.; Vaida, C. et. al., "Algebraic modeling of kinematics and singularities for a prostate biopsy parallel robot", Proceedings Of The Romanian Academy, Series A, Volume: 19 Issue: 3 Pages: 489-497 2018 (Impact factor: 1.402)
8. Pisla, D.; Tucan, P.; Gherman, B. et al., "Development of a parallel robotic system for transperineal biopsy of the prostate", MECHANICAL SCIENCES Volume: 8 Issue: 1 Pages: 195-213, 2017 (Impact factor: 1.052)
9. D. Pisla, B. Galdau, F. Covaciu, C. Vaida (c.a.), D. Popescu, N.Plitea, "Safety Issues in the Development of the Experimental Model for an Innovative Medical Parallel Robot used in Brachytherapy", International Journal of Production Research, Vol. 55(3), pp. 684-699, 2016 (ISI Journal, Impact Factor: **3.199**)
10. N. Plitea, A. Szilaghyi, D. Pisla, "Kinematic Analysis of a new 5-DOF Modular Parallel Robot for Brachytherapy", Robotics and Computer Integrated Manufacturing, vol. 31, 2015 (Impact factor: **4.392**)

Patents:
1. Vaida, C., Plitea, N., Pîslă, D., Gherman, B., Suciu, M., "Orientation module with multiple curvatures", Patent RO 129923 B1 (2019)
2. Plitea, N., Pîslă, D., Vaida, C., Gherman, B., „Surgical Robot", Patent RO 126271 (2012)

Significant products:
1. Innovative robotic system for lower limb rehabilitation, 2020
2. Innovative robotic system for upper limb rehabilitation, 2019
3. Innovative robotic system for prostate biopsy, 2018
4. Innovative robotic system for brachytherapy, 2016
5. Innovative robotic system for minimally invasive surgery, 2011

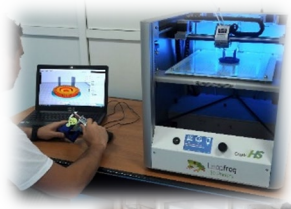
The offer addressed to the economic environment

Research & development	**Medical Robotics** With over 15 years of experience in the field of invasive medical robotics CESTER expreses interest in further cooperation in this field, of developing of optimized robotic systems for a given application. **Mechanisms synthesis** Through its specialists, CESTER research center develops advanced studies in the field of synthesis of new conceptual models of mechanisms with complex structure, focused on parallel architectures. **Precision Robotics and Microrobotics** The development of innovative solutions for robots, micro-robots and reconfigurable structures with parallel architecture with applications in various fields including. **Fluid Flow Modeling** CESTER Research Center has experience in modeling classical fluid flow and non-Newtonian fluids
Consulting	**Competitive Design.** Through its collective experience, CESTER provides advice in designing competitive products. **High power drives.** High power drives are achieved almost exclusively hydraulically. CESTER specialists have experience embodied in numerous collaborative projects with industrial partners to develop applications on this subject.
Training	Through its training center, CESTER offers those interested in advanced training Solid Edge and Siemens NX courses as well as basic courses in control systems with the B & R Automation Platform.

Additive Manufacturing and Rapid Product Development Research Centre

Contact details

Name	**Additive Manufacturing and Rapid Product Development**
Acronym	**AMaRaP**
Logo	AMaRaP
Site	https://amarap.utcluj.ro/
Address	103-105 Muncii Av., Room: G14; B07; G19; C04; M203, 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Industrial Engineering, Robotics and Production Management** **Department of Manufacturing Engineering**
Telephone	+40 264 401794
Fax	+40 264 415653
Director	Prof. Dr. Eng. Nicolae Balc
e-mail	Nicolae.Balc@tcm.utcluj.ro



Areas of expertise

3D Printing (**SLM** - Selective Laser Melting; **SLS** - Selective Laser Sintering; **FDM** - Fused Deposition Modelling); **Production Engineering** (Innovative manufacturing for product development); **Rapid Tooling** (Investment Casting, Silicone Rubber Molding, Metal Spray Tooling); **Medical Applications of AM** (Prototypes, Customized Implants, New biocompatible materials); **Industrial Engineering** (Laser Beam Machining, Water Jet Cutting, Electrical Discharge Machining); **CAD/CAM/CAE** (Applied Industrial design for products and technologies); **Concurrent engineering** (Methodologies and software tools in Design for Manufacture and Assembly-DFMA); **Composite Materials** (Manufacturing composite materials, reinforced with carbon/glass fiber).

Team

Prof. Nicolae Bâlc, Prof. Petru Berce, Prof. Mircea Ancău, Prof. Domniţa Frăţilă, Assoc. Prof. Alina Popan, Assoc. Prof. Dan Leordean, Assoc. Prof. Alexandru Popan, Assoc. Prof. Paul Bere, Assoc. Prof. Răzvan Păcurar, Assoc. Prof. Emilia Sabău, Senior Lect. Horea Chezan, Senior Lect. Cristina Borzan, Assoc. Prof. Mihai Damian, Assoc. Prof. Adrian Trif, Assoc. Prof. Alexandru Cărean, Senior Lecturer Vlad Bocăneț.

Representative projects

H2020 – DiCoMI, „Directional Composites through Manufacturing Innovation", 2018–2022, TUCN Coord: Prof. N. Bâlc, http://www.dicomi.eu;
H2020 – AMaTUC, „Boosting the scientific excellence and innovation capacity in additive manufacturing of the TUC-N", 2016–2018, Coord: Prof. N. Bâlc. www.amatuc.com;
Erasmus+ KA2 – DigiMan, „Digital Manufacturing Master Degree to set specialists for the dawn of the Industry 4.0", 2019 – 2022, TUCN Coord: Prof.N. Bâlc, http://www.digimanproject.eu;
FP7 – Adm-ERA, „Reinforcing Additive Manufacturing research cooperation between the Central Metallurgical Research and Development Institute and the European Research Area", 2011–2013, TUCN Coord: Prof. N. Bâlc; http://www.fp7-admera.org;
PCCDI, „Implementarea tehnologiilor aditive în fabricarea componentelor complexe şi suprasolicitate", 2018-2020, TUCN Coord: Prof. P. Berce;
Bridge Grant – OpTi-DeP, „Optimizarea tipăririi 3D pentru Aplicaţii Dentare Personalizate", 2016-2018, Coord: Prof. N. Bâlc;
Bridge Grant – PreMCo, „Dezvoltarea posibilităţilor de prelucrare a materialelor compozite avansate prin tăiere de precizie cu jet de apă", 2016-2018, Coord: Assoc.Prof. Alexandru Popan; http://www.premco.utcluj.ro;
Bridge Grant, „Optimizarea materialelor compozite polimerice armate cu fibre şi a tehnologiei de fabricaţie utilizate în construcţia elementelor de caroserie pentru vehicule electrice", 2016-2018, Coord: Assoc.Prof. Paul Bere;
PP H2020, "Support AMaTUC", 2016-2018, Coord. Prof. N. Bâlc;
PCCA – PECIFCO, „Implanturi cranio-faciale personalizate obtinute prin prototipare inovativa 3D din materiale compozite ranforsate cu fibra de sticla", 2014-2017, TUCN Coord: Prof. N. Bâlc;

Significant results

Selected publications in the last 5 years:

1. O. Jucan, R. Gadalean, H. Chicinas, M. Hering, N. Balc, C. Popa, "Study on the indirect selective laser sintering (SLS) of WC-Co/PA12 powders for the manufacturing of cemented carbide parts", Int Journal of Refractory Metals and Hard Materials, Elsevier, Volume: 96, 2021, (ISI-Q1, FI: 3.407); https://doi.org/10.1016/j.ijrmhm.2021.105498;
2. Cuc S., Burde A, Cosma C., Leordean D., Rusu M., Balc N., et al., "Adhesion between Biocomposites and Different Metallic Structures Additive Manufactured", Coatings, Vol 11, Issue 4, Art. no. 483, DOI10.3390/coatings11040483, 2021, (FI: 2.881)
3. C. Cosma, M. Moldovan, M. Simion, N. Balc, "Impact of laser parameters on additively manufactured cobalt chromium restorations", J of Prosthetic Dentistry, 2021, (ISI-Q1, FI: 2.76): (https://www.sciencedirect.com/science/article/pii/S0022391321000330;
4. Cosma, C; Drstvensek, I; Berce, P; Prunean, S.; Legutko, S; Popa, C.; Balc, N; „Physical-Mechanical Characteristics and Microstructure of Ti6Al7Nb Lattice Structures Manufactured by Selective Laser Melting" Materials, Vol.13, Issue: 18, Art. no. 4123, 2020, DOI: 10.3390/ma13184123, 2020, (ISI, FI: 3.424)
5. Cosma, C; Kessler, J; Gebhardt, A; Campbell, I; Balc, N., "Improving the Mechanical Strength of Dental Applications and Lattice Structures SLM Processed", Publisher: MDPI, ST Alban-Anlage 66, CH-4052 Basel, Switzerland, Vol.13, Issue 4, Article no: 905, 2020, eISSN: 1996-1944, (ISI, FI: 3.057); DOI: 10.3390/ma13040905;
6. Perini, M; Bosetti, P; Balc, N, "Additive manufacturing for repairing: from damage identification and modeling to DLD", Rapid Prototyping Journal, Publisher: Emerald Group Publishing LTD, UK, Vol. 26, Issue 5, 2020, ISSN: 1355-2546 / eISSN: 1758-7670, (Q1, FI: 3.937); DOI: 10.1108/RPJ-03-2019-0090;
7. Popan, Ioan Alexandru; Bocanet, Vlad; Balc, Nicolae; et al., „Investigation on Feed Rate Influence on Surface Quality in Abrasive Water Jet Cutting of Composite Materials", Monitoring Acoustic Emissions Advances in Manufacturing Engineering and Materials, ICMEM 2018, pg. 105-113, 2019;
8. Cosma, C.; Balc, N.; Moldovan, M.; et al., „Post-processing of customized implants made by laser beam melting from pure Titanium", Journal of Optoelectronics and Advanced Materials, Vol. 19, Issue: 11-12, pg. 738-747, 2017;
9. Balc, Nicolae; Vilau, Cristian, „Design for Additive Manufacturing, to produce assembled products, by SLS", 8th International Conference on Manufacturing Science and Education (MSE 2017) - Trends in New Industrial Revolution, Book Series: MATEC Web of Conferences, Volume: 121, Art. no. UNSP 04002, 2017;
10. Kessler, Julia; Balc, Nicolae; Gebhardt, Andreas; et al., „Basic design rules of unit cells for additive manufactured lattice structures", Modern Technologies In Manufacturing (MTEM 2017 - AMATUC), Book Series: MATEC Web of Conferences, Volume: 137, Art. no. UNSP 02005, 2017;

Selected Books

1. Berce, P., Bâlc, N., Păcurar R.., ş.a., (2014), *Tehnologii de fabricaţie prin adaugare de material şi aplicaţiile lor,* Editura Academiei Romane, Bucureşti.
2. Berce, P., Bâlc, N., Leordean Dan, ş.a., (2015), *Aplicaţiile medicale ale tehnologiilor de fabricaţie prin adăugare de material,* Editura Academiei Romane, Bucureşti - Awarded with "Henri Coandă" prize at The annual awarding ceremony of Romanian Academy, 15 December 2017, Bucharest (Romania).
3. Nicolae Balc, Dan Leordean, Editors: "Research and Applications in Manufacturing Engineering", MATEC Web of Conferences – EDP Sciences, France, Volume 299, 2019, ISBN- ISBN: 978-2-7598-9083-5, https://www.matec-conferences.org/articles/matecconf/abs/2019/48/contents/contents.html
4. Nicolae Balc, Editor: "Modern Technologies in Manufacturing", MATEC Web of Conferences – EDP Sciences, France, Volume 137, 2017, ISBN- ISBN: 978-2-7598-9083-5, https://www.matec-conferences.org/articles/matecconf/abs/2017/51/contents/contents.html
5. Nicolae Balc, Editor: "Modern Technologies in Manufacturing", Trans Tech Publications - Applied Mechanics and Materials, Switzerland, Vol. 808, 394 pagini, 2015, ISBN-13: 978-3-03835-653-0, http://www.scientific.net/AMM.808/book

International Patents:

1. „Acting Device", registered in USA and Germany; N. Balc, D. Leordean, No. US9199358 B2, 2015;

2. Betätigungsvorrichtung – European patent, owner: DE-STA-CO Company, D. Leordean, N. Bâlc, ş.a., No. EP2433750

Chairman of the **International Conference on Modern Technologies in Manufacturing** - MTeM 2013, 2015, 2017 and 2019", held in Cluj-Napoca, Romania - http://www.mtem.utcluj.ro/;

Competitive Manufacturing techniques transferred to industrial partners and used in commercial contracts with companies from Germany and England.

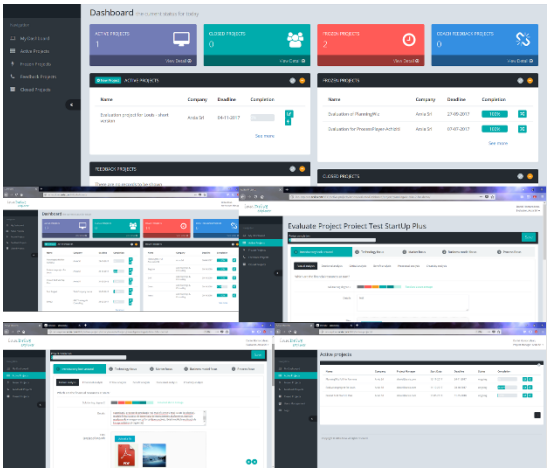
The offer addressed to the economic environment

Research & development	Design for Competitive Manufacturing of Industrial Products, Rapid Tooling and Additive Manufacturing
Consulting	External evaluation of products/projects
Training	Training for people from industry, in the following fields: - Use modern CAD systems for integrated applied design - Rapid Tooling - Modern Manufacturing Technologies

RESEARCH CENTER FOR ENGINEERING AND MANAGEMENT OF INNOVATION

Contact details

Name	**Research Centre for Engineering and Management of Innovation**
Acronym	**RESIN**
Logo	
Site	resin-utcn.ro
Address	103-105 Muncii Av., Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building Engineering Design and Robotics Department**
Telephone	+40 264 401766ș +40 730 017126
Fax	+40 264 593333 (DMCDI)
Director	Prof. Stelian Brad, PhD (eng.), PhD (econ.)
e-mail	stelian.brad@staff.utcluj.ro



InnDRIVE eXXplorer: expert system to evaluate start-ups businesses (technology transferred to Arxia) (2019)

Areas of expertise

RESIN is focused on two major areas:1. innovation engineering and 2. innovation management. The subfields of research in the case of innovation engineering are: 1.1. science and engineering of artificial intelligence in robotics systems; 1.2. science of interdisciplinary design for breakthrough innovations; 1.3. innovation for X. The subfields of research in the case of innovation management are: 2.1. science of smart innovation, 2.2. science of collaborative innovation, 2.3. innovation by structural transformation, 2.4. micro, mezzo and macro innovation systems.

Team

Academic staff: Stelian Brad (1.1-2.4), Mircea Murar (1.1, 1.2), Stefan Craciun (1.2), Ionut Chis (1.3), Claudiu Ratiu (1.3), Emilia Brad (1.3), Anca Stan (2.4), Dragos Bartos (2.3), Sanda Timoftei (1.1), Claudiu Nedeski (1.3), Cristina Miron-Borzan (1.2, 1.3) **PhD researchers:** Daniel Homorodean (2.1), Eugen Otava (2.2), Diana Veltan (2.3), Gabriela Uglea (1.3), Cristian Lang (2.4), Dan Balan (2.1), Andreas Zagos (1.3), Nino Hoch (2.3), Cosmina Mendoiu (1.1), Vlad Florian (1.1), Maria Slavoaca (1.2) **Students:** Miruna Peris (1.2), Micsku Tamas (1.1), Roxana Morar (1.1)

Representative projects

InnoCAP Transylvania, Services to Enhance the Innovation Management Capacity of SMEs, code: 831250, H2020, 2019-2020.
Ready2Go International, PROMOS, Italia, Grant Agreement no. 760 / 21.03.2018, 2018.
MARKET-IT – „Demonstrating the Industrial Validity and Market Feasibility of IT Tool to Support SMEs in Systematic Innovation Processes", Project FP7, Code: 311517, Call FP7-SME-2011, 2012-2014.
Scale-Up Transylvania: code: 764354, COSME, 2017-2018.
Study on Circular Economy Principles in SMEs from the Danube Region in: Mobilising Institutional Learning for Better Exploitation of Research and Innovation for the Circular Economy, code: MOVECO, DTP1-1-349-1.1, 2018.
CRONOS, **„Consolidation of the Innovation Ecosystem of Cluj IT by Smart Specialization towards Structural Transformation and Internationalization based on IP"**, PN-III-P2-2.1-CLS-2017-0041, 2018-2020.
Design and Development of a Package of Mobile Apps for Quality Reporting, Product Improvement and Safety Interventions, CSi Industries B.V. Holland, 2016-2018.
Innovation Management System design to Meet SR CEN TS 16555 Requirements, no. 72/ 28.12.2018, PRODIMA, 2018-2019.
Digitalization Strategy for Cluj County, Consiliul Judetean Cluj, no. 21.127/ 184 / 20.06.2018, 2018-2019.
Improving Key Production Process Performances Using Advanced "Lean" Tools, Nova Grup, 57/27.01.2016, 2016-2019.
Integrated Innovation Management Systems for SMEs, PNIIPTPCCA201341319, 2014-2017.
Active Perception Techniques for Flexible Manipulation of Objects in Smart Factories, BG, PN-III-P2-2.1-BG-2016-0140, 2016-2018.
ICT Clusters' Sustainable Cooperation for Smart and Inclusive Growth, START, DANUBE ICT - 17_PA08-C2, 2015-2016.
Innovative Design of the Security Fences for Fast Assembly and Installation, CSi Industries B.V. Holland, Grant Agreement no. 28343/10.11.2015, 2015-2016.
Expert System for Smart Robots, CSi Industries B.V. Holland, Code 2013111901, 2013-2016.
Smart Redesign of Clamp-Hook Tool to Achieve a Mass Reduction with 70%, CSi Industries B.V. Holland, 2013111902, 2013-2014.
Geiger Cybersecurity Counter, GEIGER, code: 883588, H2020-SU-DS-2019, 2020-2022.

Conception, Design and Optimization of a Connected Smart Equipment for Sublimation of Benzoic Acid from Styrax Resins, Plant Extrakt, 2366/28.01.2020, 2020.
Design and Optimization of a Underground Waste Collection System, Sky-Park, 6135/08.03.2019, 2019.

Significant results

The most representative publications of the past 5 years:

1. Brad, S., *TRIZ to Support Creation of Innovative Shared Value Business Initiatives,* in: Advances and Impacts of the Theory of Inventive Problem Solving, 101-112, Springer, ISBN 978-3-319-96531-4, https://doi.org/10.1007/978-3-319-96532-1, 2018.
2. Brad, S., Brad, E., *Quantifying and Leading Innovation with TRIZ within Competitiveness Strategies*, in: Advances and Impacts of the Theory of Inventive Problem Solving, 65-74, Springer, ISBN 978-3-319-96531-4, https://doi.org/10.1007/978-3-319-96532-1, 2018.
3. Brad, S., Murar, M., Brad, E., *Design of Smart Connected Manufacturing Resources to Enable Changeability, Reconfigurability and Total-Cost-of-Ownership Models in the Factory-of-the-Future,* International Journal of Production Research, 56 (6), 2018, 2269-2291, 10.1080/00207543.2017.1400705.
4. Brad, S., Brad, E., *Directed Innovation of Business Models*, International Journal of Management, Knowledge and Learning, 5(1), 97-119, 2016.
5. Brad, S., Murar, M., Brad, E., *Methodology for Lean Design of Disruptive Innovations*, Procedia CIRP, Elsevier, 50(2016), 153-159, 2016.
6. Brad, S., Mocan, B., Brad, E., Fulea, M., *Environmentally Sustainable Economic Growth*, Amfiteatru Economic, 18(42), 446-460, 2016.
7. Brad, S., Drăghici, A., *Lean Agile Technology Transfer Approach*, International Journal of Sustainable Economy, 8(3), 224-236, 2016.
8. Brad, S., Mocan, B., Brad, E., Fulea, M., *TRIZ to Support Blue-design of Products,* Procedia CIRP, 39 (2016), 125-131, 2016.
9. Brad, S., Mocan, B., Brad, E., Mocan, M., *Economic Development of Peripheral/Lagging Zones through Smart Innovation*, International Journal of Transitions and Innovation Systems, 4(3/4), 201-220, 2015.
10. Chioreanu, A., Brad, S., Porumb, C., Porumb, S., *E-Maintenance Ontology-Based Approach for Heterogeneous Distributed Robotic Production Capabilities*, International Journal of Computer Integrated Manufacturing, Taylor & Francis, DOI: 10.1080/0951192X.2014.880802, 28(2), 200-212, 2015.
11. Brad, S., Murar, M., *Employing Smart Units and Servitization towards Reconfigurability of Manufacturing Processes*, Procedia CIRP, Elsevier, 30 (2015), 498-503, 2015.
12. Brad, S., Mocan, B., Brad, E., Fulea, M., *Leading Innovation to Improve Complex Process Performances by Systematic Problem Analysis with TRIZ*, Procedia Engineering, 131(2015), 1121-1129, Elsevier, 2015.
13. Brad, S., Brad, E., *Enhancing SWOT Analysis with TRIZ-based Tools to Integrate Systematic Innovation in Early Task Design*, Procedia Engineering, 131(2015), 616-625, Elsevier, 2015.
14. Murar, M, Brad, S., Fulea M., Chis, I., Craciun, S., *Industrial Equipment Enhancement Using Cyber Physical Systems Towards Smart Equipment,* 2016 International Conference on Production Research, 347-354, 2016.

Technologies:

- innDrive eXXplorer: expert system for assessing innovations
- inovex : software platform for supporting knowledge management and process innovation (TRIZ-M; ARIZ-M)
- MARKET-IT: web application of advanced web semantic technologies to support the innovation processes in SMEs

Patents:

Brad, S., Murar, M., Intelligent Automation System Based on a Distributed, Reconfigurable and Adaptive Architecture, EPO Patent app. no. 13465501.8-1807, UTC-N.

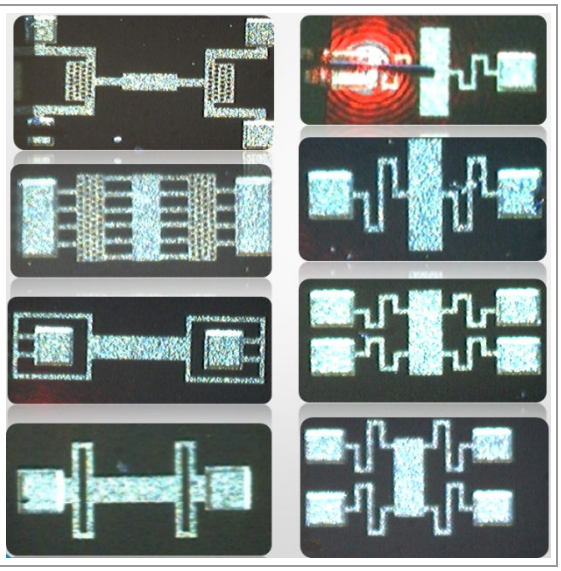
The offer addressed to the economic environment

Research & development	Industry 4.0, mechatronic products and systems, disruptive product design, lean robotics, AI/data analytics in industrial production, AI in robotics, customized robotic system design, robotics for special applications/services, collaborative robots, green/blue-design and circular economy, production robotization
Consulting	Innovation management systems, digital transformation of businesses, scaling-up of businesses, business internationalization, assessment of innovations, smart specialization of businesses, lean and agile management, servitization of businesses, collaborative innovation, IP valuation, technology transfer
Training	*Management:* innovation management, product management, project management, contract negotiation and management, business model innovation, entreprenurial plan development, inventive problem solving in management, competitive engineeirng of new products and services *Engineering:* robot programming (ABB, Fanuc, Motoman, Kuka), tools for innovation engineering, PLC programming and TIA portal, I-IoT, programming of social robots, offline robot programming and computer aided robotics

MICRO - NANO SYSTEMS LABORATORY

Contact details

Name	**Micro – Nano Systems Laboratory**
Acronym	**MiNaS**
Logo	MiNaS
Site	http://minas.utcluj.ro/
Address	103-105 Muncii Av., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building** **Mechanical Systems Engineering Department**
Telephone	+40 264 202787
Fax	+40 264 401660
Director	**Prof. Dr. Eng. Marius Pustan**
e-mail	Marius.Pustan@omt.utcluj.ro



Areas of expertise

Micro & Nano -systems
Micro & Nano -mechanics
Micro & Nano -tribology
MEMS & NEMS, Microstructures and materials
Adhesion, Friction, Fatigue, Reliability Design and Optimization

Team

Prof. Dr. Eng. Marius Pustan, Prof. Dr. Eng. Corina Birleanu, Prof. Dr. Eng. Cristian Dudescu, Dr. Eng. Violeta Merie, Math. Florina Maria Rusu, Eng. Radu Chiorean, Dr. Eng. Horea Crisan, PhDs Ionut Maries

Representative projects

MatSpaceTEG, "**High Performance Materials for the next generation Space Thermoelectric Generators**", Romanian Space Agency (STAR) 193/15.09.2017, 2017-2019
ROMEC, Fabrication of a MEMS switch with robust metal contact, PN-III-P2-2.1-PED-2016-1727, (2016-2018)
multiDOF, "**Advanced Design of micromembranes with multiple degrees of freedom for optical MEMS applications**, PN-II-RU-TE-2014-4, 2015-2017
ROBOGRIP, "**Microgrippers as end-effectors with integrated sensors for microrobotics applications**" MANUNET ERA-NET 22/ 2016, 2016-2018
NARDEMS, "**Nano mechanical and Nano tribological characterizations for reliability design of MEMS resonators**", PNII-RU-TE-2011, 2011-2014
3SMVIB, "3 Scale modeling for robust-design of vibrating micro sensors", ERA Net, 2012-2015
REDEMS, "**Reliability design of RF-MEMS switches for space applications**, The Research, Development and Innovation Space Technology and Advanced Research", Romanian Space Agency (STAR), 2012-2015
MEMSMAT, "**Tribomechanical Characterization of MEMS Materials for Space Applications under harsh environments**", Romanian Space Agency (STAR), 2013 – 2016

Significant results

The most representative publications of the past 5 years:

1. M Pustan, C Birleanu, V Merie, S Garabagiu, D Marconi, L Barbu-Tudoran, R Voicu " Thermal effect on mechanical properties of titanium oxide thin films for thermoelectric applications", Symposium on Design, Test, Integration and Packaging of MEMS/MOEMS, DTIP 2019 – IEEE, 2019
2. C Birleanu, M Pustan, V Merie, MS Pop „Temperature Effect on Tribo-Mechanical Properties of Dental Materials", 6th International Conference on Advancements of Medicine and Health Care through, Springer, Singapore, 2019
3. A Baracu, R Muller, R Voicu, C Tibeica, A Dinescu, M Pustan, C Birleanu „Microfabrication and experimental characteriztion of an out-of-plane MEMS switch", Romanian Journal of Information Science and Technology, 22/2, pp 124-134, 2019
4. C Birleanu, M Pustan, F Serdean, V Merie, S Craciun „Temperature effect on pull-off force for gold cantilevers array", IOP Conference Series: Materials Science and Engineering, 499/1, 2019
5. C Birleanu, M Pustan, M Merie, H Crisan „Effect of film thickness on the tribo-mechanical properties of chrome-gold thin films", Proceesings of the Romanian Academy Series A – Mathematics, Physics, Technical Science, Information Science, 20/ 2, pp 174-183, 2019
6. F Șerdean, M Pustan, V Merie, C Bîrleanu, H Crișan „ Analysis of humidity influence on adhesion and tribological properties of niobium nitride thin films", IOP Conference Series: Materials Science and Engineering, 499/1, 2019

7. V Merie, M Pustan, G Negrea, C Bîrleanu, F Șerdean „Temperature effect on the mechanical characteristics of niobium nitride thin films", IOP Conference Series: Materials Science and Engineering, 499/1, 2019
8. C Birleanu, M Pustan, F Rusu, C Dudescu, R Muller, A Baracu A. „Relative humidity influence on adhesion effect in MEMS flexible application", Journal Microsystem Technologies, Micro- and Nanosystems Information Storage and Processing Systems, ISSN: 0946-7076 (Print) 1432-1858 (Online), 2018
9. M Pustan, C Birleanu, C Dudescu, JC Golinval "Dynamical Behavior of Smart MEMS in Industrial Applications", in book Smart sensors and MEMS: Intelligent devices and microsystems for industrial applications, Edited by S Nihtianov and A L Estepa, Woodhead Publishing Series in Electronic and Optical, 2017
10. M Pustan, C Dudescu, C Birleanu, F Rusu "Nanocharacterization of the Mechanical and Tribological Behavior of MEMS Micromembranes", Book chapter in Nanomechanics, book edited by Intech, ISBN 978-953-51-3182-3, Print ISBN 978-953-51-3181-6, Published: May 24, 2017 under CC BY 3.0 license. 2017
11. V Merie, M Pustan, G Negrea "Atomic force microscopy analyses on metallic thin films for optical MEMS", 5th International Conference on Powder Metallurgy and Advanced Materials, Book Series: Materials Research Proceedings, 8, pp 125-133, 2018
12. M Pustan, C Birleanu, C Dudescu "Nanocharacterization of the adhesion effect and bending stiffness in optical MEMS", APPLIED SURFACE SCIENCE, 421, pp 191-199, 2017
13. M Pustan, R Chiorean, C Birleanu, Corina et al. "Reliability design of thermally actuated MEMS switches based on V-shape beams", Microsystem Technologies-Micro-and Nanosystems-Information Storage and Processing Systems, 23/ 9, pp 3863-3871, 2017
14. M Pustan, C Dudescu, C Birleanu "Influence of the excitation modes on the resonators quality factor", Romanian Journal of Information Science and Technology, 20/ 4, pp 342-353, 2017
15. C Birleanu, M Pustan, R Müller, C Dudescu, V Merie, R Voicu, A Baracu "Experimental investigation by atomic force microscopy on mechanical and tribological properties of thin films", Int. J. of Mat. Res., 107, pp. 429 – 438, 2016
16. M Pustan, C Dudescu, C Birleanu "The effect of sensing area position on the mechanical response of mass-detecting cantilever sensor", Microsystems Technologies, 21/ 9, pp 1827-1834, 2015.
17. M Pustan, C Dudescu, C Birleanu "Nanomechanical and nanotribological characterization of a MEMS micromembrane supported by two folded hinges", Analog Integrated Circuits and Signal Processing, 82/ 3, pp 627-635, 2015
18. R Voicu, M Pustan, C Birleanu, A Baracu, R Muller "Mechanical and tribological properties of thin films under changes of temperature conditions", Surface and Coatings Technology, 271, pp 48-56, 2015
19. F Rusu, M Pustan, C Birleanu, R Muller, R Voicu, A Baracu "Analysis of the surface effects on adhesion in MEMS structures", J. Applied Surface Science, 358 Part B, pp 634-640, 2015
20. V Merie, M Pustan, G Negrea, C Birleanu "Research on titanium nitride thin films deposited by reactive magnetron sputtering for MEMS applications", J. Applied Surface Science, 358 Part B, pp 525-532
21. C Birleanu, M Pustan M. "Analysis of the adhesion effect in RF-MEMS switches using atomic force microscope", Analog Integrated Circuits and Signal Processing, 82/ 3, pp 571-581, 2015.

Significant solutions:

Development of a new method to estimate the stiffness of micro/ nano -flexible structure by atomic force microscope
Experimental determination of the energy dissipation in oscillating structure in order to increase the lifetime of vibrating sensors
Design-Fabrication-Testing of reliable mass-detection sensors
Design-Fabrication-Testing of micromembranes with high flexibility
Software development for lifetime estimation of vibrating MEMS structures
Advance nano-investigations of dental materials

Products and technologies:

Micromembrane from optical and RF applications
Paddle MEMS cantilevers for mass detection
Electrostatically actuated resonator
MEMS Software Development

The offer addressed to the economic environment

Research & development	- Micro and Nano - Systems - Micro and Nano - Tribology - Micro and Nano - Mechanics Team members have great knowledge in: reliability design of micro and Nano systems, Nano /micro / macro tribological characterizations, experimental mechanics, material testing and numerical simulations. Due to a close collaboration with the productive sector, the research team is capable of collaboration with various industrial partners and research institutes. Already the laboratory is involved in collaborations with industrial partners, universities and research institutes from Romania, Belgium, Poland, Italy and France.
Consulting	Consulting in any of the above mentioned fields can be done.
Training	The members of the team have a vast experience in the educational field (academics). Also, the team has experience in the development of the professional formation and reorientation trainings for engineers in the field of Micro and Nano system design, advance testing at Micro & Nano devices.

RAPID PROTOTYPING LABORATORY

Contact details

Name	**Rapid Prototyping Laboratory**
Acronym	**FARAP**
Logo	
Site	http://www.tcm.utcluj.ro
Address	103-105Muncii Av., Room: B05, B06, G15, C 03, 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building Faculty, Department of Manufacturing Engineering**
Telephone	+40 264 415653
Fax	+40 264 415653
Director	Prof. Dr. Eng. Petru Berce
e-mail	Petru.Berce@tcm.utcluj.ro

Areas of expertise

Industrial Engineering (Rapid Prototyping of complex parts and master models for Rapid Tooling)
CAD/CAM Systems
Biomedical engineering (Prototypes, customized implants, new biocompatible materials)

Team

Prof. Dr. Eng. Petru Berce, Prof.dr.ing. Nicolae Balc,Assoc. Prof. Dr. Eng. Răzvan Păcurar Assoc. Prof. Dr. Eng. Mihai Damian, Assoc. Prof. Dr. Eng. Cristian Caizar, Assist. Prof. Dr. Eng. Horea Chezan, Assoc. Prof. Dr. Eng. Dan Leordean, Assoc. Prof. Dr. Eng Radu Sever Adrian, Assist. Prof. Dr. Eng. Ancuţa Păcurar, Assist.Prof.Dr.Eng. Cristina Borzan

Representative projects

OP3MET, **"Optical 3D Metrology - Automated in-line metrology for quality assurance in the manufacturing industry"**, European FP6 Project, (2006-2008)
Adm-ERA, **"Reinforcing Additive Manufacturing research cooperation between the Central Metallurgical Research and Development Institute and the European Research Area"**, European FP7 Project, (2011-2013)
BIOMAPIM, **"New Biocompatible Materials for personalized implants made by SLS and SLM"**, PCCE, (2010-2013)
"Innovative Manufacturing Network", (2005-2008)
"**AMaTUC – Boosting the scientific excellence and innovation capacity in additive manufacturing of the Technical University of Cluj-Napoca**", HORIZON 2020 – twinning, 2016-2018

Significant results

The most representative publications of the past 5 years:

1. Pacurar, R.; Berce, P.; Petrilak, A.; Neme¸s, O.; Borzan, C. ¸S.M.; Harnicárová, M.; Pacurar, A. Selective Laser Melting of PA 2200 for Hip Implant Applications: Finite Element Analysis, Process Optimization, and Morphological and Mechanical Characterization. Materials 2021, 14, 4240. https://doi.org/10.3390/ma14154240 (ISI-Q1, IF: 3,623)
2. O. Jucan, R. Gadalean, H. Chicinas, M. Hering, N. Balc, C. Popa, "Study on the indirect selective laser sintering (SLS) of WC-Co/PA12 powders for the manufacturing of cemented carbide parts", International Journal of Refractory Metals and Hard Materials, Elsevier, Volume: 96, 2021, (ISI-Q1, FI: 3.407); https://doi.org/10.1016/j.ijrmhm.2021.105498;
3. D. Ostas, M. Hedesiu, C.R. Roman, C. Cosma, M. Ciurea, H. Rotaru, Design Workflow for Mandibular Reconstruction. Opportunities and Limitations of In-house Virtual Surgical Planning, Journal of Medical and Biological Engineering, vol. 1, 2021, (IF 1.5).
4. C. Cosma, M. Moldovan, M. Simion, N. Balc, Impact of laser parameters on additively manufactured cobalt-chromium

restorations, Journal of Prosthetic Dentistry, vol. 1, 2021 (IF 3.4).
5. S. Cuc, A. Burde, C. Cosma, D. Leordean, M. Rusu, N. Balc, D. Prodan, M. Moldovan, Adhesion between Biocomposites and Different Metallic Structures Additive Manufactured, Coatings, vol. 11 (4), 483, 2021 (IF 2.8).
6. Cosma, C; Drstvensek, I; Berce, P; Prunean, S.; Legutko, S; Popa, C.; Balc, N; „Physical-Mechanical Characteristics and Microstructure of Ti6Al7Nb Lattice Structures Manufactured by Selective Laser Melting", MATERIALS, Volume: 13 Issue: 18, 2020. Article Number: 4123, DOI:10.3390/ma13184123,
7. M. Harničárová, J. Valíček, M. Kušnerová, Z. Palková, I. Kopal, C. Borzan, M. Kadnár and S. Paulovič, A New Method of Predicting the Structural and Mechanical Change of Materials during Extrusion by the Method of Multiple Plastic Deformations, Materials 2021, 14, 2594, ISSSN 1996-1944, IF 3.057, (Q2).
8. Cosma, C; Kessler, J; Gebhardt, A; Campbell, I; Balc, N., "Improving the Mechanical Strength of Dental Applications and Lattice Structures SLM Processed", Publisher: MDPI, St Alban-Anlage 66, CH-4052 Basel, Switzerland, Volume: 13, Issue 4, Article no: 905, 2020, eISSN: 1996-1944, DOI: 10.3390/ma13040905, Published 2020, Q2-FI: 3.057;
9. Perini, M; Bosetti, P; Balc, N," Additive manufacturing for repairing: from damage identification and modeling to DLD", Rapid Prototyping Journal, Publisher: Emerald Group Publishing LTD, UK, Volume: 26, Issue 5, ISSN: 1355-2546 / eISSN: 1758-7670, DOI: 10.1108/RPJ-03-2019-0090, Published 2020, Q1-FI: 3.937;
10. Armencea, G., Cosma, C., Dinu, C., Onisor, F., Lazar, M., Berce, P., Balc, N., Baciut, M., Bran, S., Technical queries of a 3D design custom-made implant made from titanium particles for maxillofacial bone reconstruction, Particulate Science and Technology, Volume: 38 Issue 6 Pages 676-684, TAYLOR & FRANCIS INC, ISSN: 0272-6351, DOI: 10.1080/02726351.2019.1578846, Published 2020, Q3- FI=1.619
11. C. Cosma, J. Kessler, A. Gebhardt, I. Campbell, N. Balc, Improving the Mechanical Strength of Dental Applications and Lattice Structures SLM Processed, Materials, vol. 13 (4), 905, 2020 (IF 3.0).
12. M Todea, A Vulpoi, C Popa, P Berce, S Simon. Effect of different surface treatments on bioactivity of porous titanium implants, In: Journal of materials science & technology 35 (3), 418-426, 2019

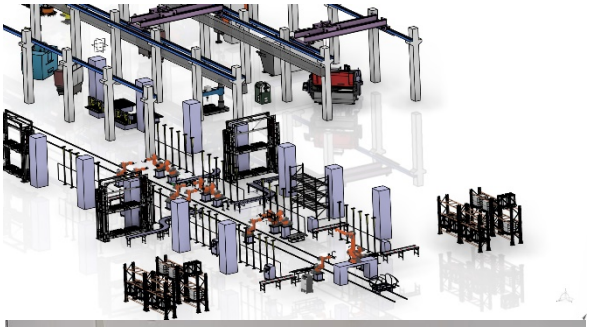
The offer addressed to the economic environment

Research & development	Develop new materials, suitable for Rapid Prototyping using the SLS and SLM equipment. Rapid Prototyping using the well known CNC machines, available within DME-TUCN
Consulting	Select the optimal RP technological route
Training	Training for people from industry, in the following fields: - Using the modern RP equipment; - CNC machining; - Metrology and Quality Engineering.

DASSAULT SYSTÈMES SOLUTIONS CENTER

Contact details

Name	**Dassault Systèmes Solutions Center**
Acronym	**DSSC**
Logo	CENTRUL DE COMPETENTE SI SOLUTII DASSAULT SYSTEMES
Site	https://dssc.utcluj.ro/
Address	103-105 Muncii Av., Rooms: B07, B09, M401, M402, M403, M404, Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building Design Engineering and Robotics Department**
Telephone	+40 264 202796
Fax	+40 264 415710
Director	Prof. Dr. Eng. Daniela Popescu
e-mail	daniela.popescu@muri.utcluj.ro



Areas of expertise

The main focus of the center is **Digital Product and Production Design Development and Simulation** based on the following topics:
CAD/CAM/CAE – the center is the first Dassault Systèmes academic partner from Romania and offers solutions in the fields of computer aided design, as well as modelling and simulation of products and manufacturing systems**.**
Reverse engineering and digitization –with interdisciplinary applications in: innovative product development, digital archaeology and reconstruction of history, medical prosthetics and others.
Virtual and augmented reality – complex computer-generated 3D environments that allow users to access and interact with an alternative reality. Users are able to interact with 3D models, in a proportion 1:1 or bigger overview of complex assembly parts and conduct virtual inspections, pick apart parts and break them down to its individual components for measurement, inspection, ergonomics, etc.

Team

Prof. Dr. Eng. Daniela Popescu, Prof. Dr. Eng. Mircea Galiş, Prof. Dr. Eng. Călin Neamţu, Lect. Dr. Eng. Florin Popişter, Assist. Dr. Eng. Rareș Ghinea, Assist. Dr. Eng. Radu Comes, Dr. Eng. Buna Zsolt, Dr. Eng. Ionuț Badiu, Eng, Sabau Radu, Eng. Zabala Ioan

Representative projects

IDArt – "Elaborating Complex Methodologies Regarding the Attribution and Authentication of Medieval and Early Modern Paintings Belonging to the National Cultural Heritage", PNIII-P1-1.2 PCCDI 2018, (2018-2020)
DACIT, "The conservation and revitalisation of cultural and natural heritage, When ancient everyday life becomes UNESCO heritage. The scanning, digital restoration and contextualization of Dacian artefacts from Orăştie Mountains", EEA grants - PA16/RO12, (2015-2016)
CAD/CAM/CAE, projects contracts with industrial partners Comelf SA, Turdeana SA, RAAL SA, Robert Bosch SRL, Continental Automotive Romania, Elcom Cablaje, Leoni Wirings System Romania, etc.
NoGAP, **"Knowledge Transfer Community to bridge the gap between research, innovation and business creation"**, European FP7 project, (2013-2016)
"Digitizing and reconstructing the historic artifacts from the "Grădiştea de munte" archaeological site (Sarmisegetuza Regia)", The National Museum of History of Transylvania, (2012)
"Blended learning course on Measurement Uncertainty for advanced vocational training", Leonardo da Vinci - Transfer of Innovation, (2011-2013)
"Realizing a virtual museum for promoting the patrimony of The National Museum of History of Transylvania",

The National Museum of History of Transylvania (2010)
"Project concerning research on new product design, development and simulation", HAMK Univ. Finland , (2007-2009)
"Scanning and generating surfaces for a orthopedic prosthesis", SC Gibas CNC East Europe SRL, (2008)

Significant results

The most representative publications of the past 5 years:

1. Neamtu, Calin; Marutoiu, Victor Constantin; Bratu, Ioan; et al., Multidisciplinary Investigation of the Imperial Gates of the 17th Century Wooden Church in Salisca, Cluj County, Romania SUSTAINABILITY Volume: 10 Issue: 5 Article Number: 1503 Published: MAY 2018
2. Todorovic, Oliver; Constantinescu, Carmen; Popescu, Daniela, FOUNDATIONS FOR ECONOMIC EVALUATION OF EXOSKELETONS IN MANUFACTURING, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 61 Issue: 3 Special Issue: SI Pages: 221-230 Published: SEP 2018
3. Popescu, D.; Dragomir, M.; Popescu, S.; et al., FROM SMART PRODUCTS TO SMART MANUFACTURING IN EMERGING ECONOMIES: CHALLENGES AND INSIGHTS FROM THE FURNITURE INDUSTRY 24TH INTERNATIONAL CONFERENCE ON PRODUCTION RESEARCH (ICPR) Book Series: DEStech Transactions on Engineering and Technology Research Pages: 93-97 Published: 2017
4. Bratu, I.; Siluan, Monk; Marutoiu, C.; et al., Science Applied for the Investigation of Imperial Gate from Eighteenth Century Wooden Church of Nicula Monastery JOURNAL OF SPECTROSCOPY Article Number: 6167856 Published: 2017
5. Măruţoiu, C., I. Bratu, L. Troşan, C. Neamtu, V. C. Măruţoiu, D. Pop, C. Tănăselia, and S. Garabagiu. "Scientific investigation of the Imperial Gates belonging to the wooden church from Săcel, Turda County, Romania." *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 152 (2016): 311-317.
6. C. Marutoiu, L. Nica, I. Bratu, O. F. Marutoiu, Z. Moldovan, C. Neamtu, et al., "The Scientific Investigation of the Imperial Gates Belonging to Sanmihaiul Almasului Wooden Church (1816)," *Revista De Chimie*, vol. 67, pp. 1739-1744, Sep 2016.
7. C. Radu, C. Neamtu. "Design a low-cost eyewear display adapted to additive manufacturing." *Acta Technica Napocensis-Series: Applied Mathematics, Mechanics, and Engineering*, 58, no. 4 (2015).
8. D. Popescu, F. Popister, S. Popescu, C. Neamtu, and M. Gurzau, "Direct toolpath generation based on graph theory for milling roughing", *Procedia CIRP*, 25, 2014, pp.75-80.
9. D. Popescu, S. Popescu, C. Neamţu, "Framework for increasing adequacy of simulation software in training CMM specialists", in *10th CIRP International Conference on Computer Aided Tolerancing*, pp. 243-250
10. D. Popescu, S. Popescu, C. Neamţu, D. Mihai, "Model for developing design of the electronic courses" in *IEEE International Conference Automation, Quality and Testing, Robotics*, pp. 483-488

Significant solutions:
Measurement uncertainty evaluation in case of classical measurements hand tools for length
Mold Design for injected plastic part
Reverse engineering of mechanical parts
Terrestrial laser scanning
Products and technologies:
Virtual reality application for museum
Augmented reality application for measurement
Others:
Neamțu Călin, Popescu Daniela, Popișter Florin, *Module CAD/CAM în Catia V5*, Editura Mega, Cluj-Napoca, 2013
Neamțu Călin, Dragomir Mihai, Popescu Daniela, Popescu Sorin, Răcăsan Radu *Uncertainty of conventional measurements / Incertitudinea de măsurare în metrologia clasică*, Editura UT PRESS, Cluj-Napoca, 2012
Wojciech Plowucha (ed.) et al. – *Didactics of Coordinate Metrology*, Editura Wydawnictwo naukowe Akademii Techniczo-Humanistycznej W Bielsku-Bialej, - Bielsko Biala 2012, - capitolul Virtual Laboratory, autori: Călin Neamțu, Mihai Dragomir, Daniela Popescu, Rareș Ghinea

The offer addressed to the economic environment

Research & development	Virtual reality in training and education; E-education; Designing and optimization of products and industrial manufacturing systems; Reverse engineering; Digital Archaeology; Research in the field of Digital Factory simulations; Research on adapting the reverse engineering techniques in various interdisciplinary fields (art, medicine, etc.) Reverse engineering and reconstruction of complex surfaces Designing, modelling and 3D simulating of manufacturing systems 3D modelling of components and complex assemblies
Consulting	Consultancy regarding the optimization of CAD/CAM processes; Consultancy regarding production planning; Consultancy regarding advance 3D modelling; Consultancy in virtual simulation
Training	CAD/CAM/CAE: using the Dassault Systèmes software packages Training on various topics with the help of virtual reality Advanced reverse engineering technique, 3D Shet metal design, Measurement Uncertainty

QUALITY ENGINEERING AND MANAGEMENT RESEARCH CENTER

Contact details

Name	**Quality Engineering and Management Research Center**
Acronym	**QEMRC**
Logo	
Site	http://qemrc.utcluj.ro
Address	103-105 Muncii Blvd., rooms B01, B07, B08, M110, M405, M406, Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building Design Engineering and Robotics Department**
Telephone	+40 264 401761
Fax	+40 264 415710
Director	Prof. Dr. Eng. Sorin Popescu
e-mail	sorin.popescu@muri.utcluj.ro mihai.dragomir@muri.utcluj.ro

Areas of expertise

Quality management and engineering - Interdisciplinary research area, with applicability in industry, in the service sector and in the public sector (education, health, administration) for improving products/services, processes and organizations

Quality and sustainability-oriented development - applying specific algorithms, techniques and methods for developing products/services, processes and organizations to meet current and future market needs and environmental challenges

Industrial metrology - high precision 3D measurement and scanning in industrial engineering; 3D surface scanning for reverse engineering and interdisciplinary applications

Team

Prof. Dr. Eng. Sorin Popescu, Prof. Dr. Eng. Mihai Dragomir, Prof. Dr. Eng. Liviu Crişan, Assoc. Prof. Dr. Eng. Dan Hurgoiu, Assoc. Prof. Dr. Diana Dragomir, Assoc. Prof. Dr. Eng. Grigore Pop, Sen. Lect. Dr. Eng. Ștefan Bodi, Sen. Lect. Dr. Eng. Emilia Câmpean, and other collaborators as well as PhD students.

Representative projects

Danube Chance 2.0 - Embracing failure to facilitate second-chance entrepreneurship in the Danube region, Interreg - Danube Transnational Programme, DTP2-012-1.2 (2018-2020)
Made in Danube (MiD) - Transnational Cooperation to transform knowledge into marketable products and services for the Danubian sustainable society of tomorrow, Interreg - Danube Transnational Programme, DTP1-1-072-1.1, (2017-2019)
Smart Factory Hub (SFH) - Improving RD and business policy conditions for transnational cooperation in the manufacturing industry, Interreg - Danube Transnational Programme, DTP1-1-071-1.1, (2017-2019)
GPS-VToolbox - Geometrical Product Specification and Verification as toolbox to meet up-to-date technical requirements, Erasmus+ Programme Key Action 2 - Strategic Partnership Projects, (2015-2018)
DACIT - When ancient everyday life becomes UNESCO heritage. The scanning, digital restoration and contextualization of Dacian artefacts from Orăştie Mountains, EEA grants - PA16/RO12, (2015-2016)

Significant results

Representative publications of the past 5 years:

Articles in journals and international conference proceedings:

1. Popescu S., Rusu D., Dragomir M., Popescu D., Nedelcu Ș., Competitive Development Tools in Identifying Efficient

Educational Interventions for Improving Pro-Environmental and Recycling Behavior, International Journal of Environmental Research and Public Health, 2020, 17(1):156, https://doi.org/10.3390/ijerph17010156, Web of Knowledge Q1 journal
2. Teleabă, F., Popescu, S., Olaru, M., Pitic, D., Risks of Observable and Unobservable Biases in Artificial Intelligence Predicting Consumer Choice, Amfiteatru Economic, 2021, 23(56), pp. 102-119, https://doi.org/10.24818/EA/2021/56/102, Web of Knowledge Q2 journal
3. Weckenmann A., Bodi Ş., Popescu S., Dragomir M., Hurgoiu D., Comes R., Hit or Miss? Evaluating the Potential of a Research Niche: A Case Study in the Field of Virtual Quality Management, Sustainability, vol. 11, issue 5, p. 1450, 2019, https://doi.org/10.3390/su11051450, Web of Knowledge Q2 journal
4. Dragomir M., Popescu S., Neamțu C., Dragomir D., Bodi Ș., Seeing the Immaterial: A New Instrument for Evaluating Integrated Management Systems' Maturity, Sustainability, vol. 9, issue 9, p. 1643, 2017, ISSN 2071-1050, https://doi.org/10.3390/su9091643, Web of Knowledge Q2 journal
5. Popescu, S., Santa, R., Teleabă, F., Ileșan, H., A structured framework for identifying risks sources related to human resources in a 4.0 working environment perspective, Human Management Systems, 2020, Volume: 39, Issue: 4, Pages: 511-527. ISI WoS, ESCI, https://doi.org/10.3233/HSM-201034
6. Diana Dragomir, Diana Pitic, Mihai Dragomir, Daniela Popescu, Overview of Technology Commercialization Options in Romania, In The International Symposium for Production Research (Lecture Notes in Mechanical Engineering), 24-26 September 2020, Antalya, Turkey (online), pp. 658-664. Springer, Cham, 2020, indexed in SpringerLink, https://doi.org/10.1007/978-3-030-62784-3_56
7. Teleabă F., Popescu S., Santa R., Managing Quality Perception Along the Customer Journey: A Behavioral Economics Approach. In: Durakbasa N., Gençyılmaz M. (eds) Proceedings of the International Symposium for Production Research 2019. ISPR 2019, ISPR 2019. Lecture Notes in Mechanical Engineering. Springer, Cham, 2020, indexed in Springer Link, https://doi/org/10.1007/978-3-030-31343-2_43
8. Dragomir D., Câmpean E., Pop G., Dragomir M., Ambroș I., Designing a toolkit for process improvement in an engineering services start-up, Proceedings of the 6th Review of Management and Economic Engineering Internat. Conference, Cluj-Napoca, Sept. 2018, pp. 448-452, indexed in ISI Conference Proceedings
9. Popescu D., Dragomir M., Popescu S., Neamțu C., From Smart Products to Smart Manufacturing in Emerging Economies: Challenges and Insights from the Furniture Industry, 24th International Conference on Production Research (ICPR), Poznan, Poland, 30 July - 3 August, 2017, Book Series: DEStech Transactions on Engineering and Technology Research, Pages 93-97, 2017

Books / chapters:

1. Dragomir Diana, Dragomir Mihai, Acs Daniel, Popescu Sorin, International Cooperation for Smart and Sustainable Agriculture, Chapter in "Sustainability assessment at the 21st Century", IntechOpen, DOI: 10.5772/intechopen.86464. https://www.intechopen.com/online-first/international-cooperation-for-smart-and-sustainable-agriculture, 2019
2. Popescu Daniela, Dragomir Diana, Comes Radu, Popescu Sorin, Dragomir Mihai, Neamțu Călin; Enhancing Management and Marketing in Cultural Heritage by Using New Technologies, Trivent Publishing, https://www.trivent-publishing.eu/books/romanianmanagementstudies/2.%20Daniela%20Popescu%20et%20al..pdf, Chapter in "The best Romanian Management Studies", 2017-2018, ISBN 978-615-81353-5-1, pp. 20-32, 2020

Significant solutions:

Design and development of standardized management systems
Customer and sustainability-oriented product development
Precision measurements using multiple sensor technologies
3D scanning and interdisciplinary reverse engineering

Others:

Main organizers of the International Conference series Quality and Innovation in Engineering and Management (QIEM) Cluj-Napoca (between 2011 and 2021)

The offer addressed to the economic environment

Research & development	Quality and sustainability-oriented product and process development Optimizing the implementation of standardized management systems High precision 3D measurement and complex 3D surface scanning
Consulting	Designing, implementing, maintaining and improving standardized management systems Consultancy on developing new products or improving existing ones
Training	Quality engineering and management Industrial metrology and 3D scanning

RESEARCH LABORATORY FOR MANUFACTURING PARTS FROM COMPETITIVE MATERIALS

Contact details

Name	**Research Laboratory for Manufacturing Parts from Competitive Materials**
Acronym	**CoMaRLaMP (RLMPCM)**
Logo	FAPIMAC
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Industrial%20Engineering%20and%20Management/FAPIMAC_GrozavSorin.pdf
Address	103-105 Muncii Av., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Machine Building Manufacturing Engineering Department**
Telephone	+40 264 401709
Fax	+40 264 415453
Director	Prof. Dr. Eng. Sorin Grozav
e-mail	Sorin.Grozav@tcm.utcluj.ro

Areas of expertise

Composite and plastic material
- Conception, manufacturing and mechanical behavior of polymer composites, Mechanical behavior of materials at low and cryogenic temperature.
Design of cutting tools
- Cutting and cutting tools, Metalworking technology, Tools for machine tools.
Device design and maintenance
- Design devices, Technologies and equipment for reconditioning.
Processing machinery
- Forming machines, Forming Machines and technologies, Mechanization and automation of technological processes of cutting and forming, CNC machine tools.
Medical devices
- Osteosynthesis material, Intramedullary nailing

Team

Prof. Dr. Eng. Sorin Grozav, Prof. Dr. Eng. Ioan Vuscan, Prof. Dr. Eng. Marian Borzan, Prof. Dr. Eng. Liana Hancu, Assoc. Prof. Dr. Eng. Gheorghe Gligor, Assist. Prof. Dr. Eng. Adrian Trif, Assist. Prof. Dr. Eng. Paul Bere, Assist. Prof. Dr. Eng. Vasile Ceclan, Assist. Prof. Dr. Eng. Adrian Popescu

Representative projects

BELCO – "Optimizing the fiber reinforced polymer composite materials and manufacturing technology used in the producing body elements for electric vehicles", PNIII-P2-2.1-BG-2016-0210, (2016-2018)
"**3D modeling of complex surfaces" –** contract with industry, (2017-2018)
"Informatics Platform for Engineering Fluid PIIF", POSDRU, (2010-2013)
"Advanced Solutions to Improve Performance in Bending with Active Plates of Elastomer", CNCSIS, (2009-2012)
"Development of a Computer System for Assessing of Occupational Hazards Type Mechanical Vibrations and Impact on Human Operator Workplace", VIBROM, (2008-2011)

Significant results

The most representative publications of the past 5 years:

1. Gabriel CIUSCA, Teodor POTRA, Vasile CECLAN, Sorin GROZAV - *Determination of Field Temperature for Composite Materials using Empirical Methods*, Springer Nature Switzerland AG 2020, N.M.Durakbasa and M.G.

Gencyilmaz(Eds.): ICPR1 2019, LNME, pp. 416-421, 2020. https://link.springer.com/chapter/10.1007%2F978-3-030-31343-2_36
2. Simona Sorina GABRIAN, Sorin-Dumitru GROZAV, Gabriel Nicodim CIUŞCĂ, Vasile, Adrian CECLAN, Antoniu TURCU and Stanislaw LEGUTKO, - *New materials obtained by rubber recycling from industrial waste*, MATEC Web of Conferences; Les Ulis Vol. 299, Les Ulis: EDP Sciences.(2019)05010(2019) https://doi.org/10.1051/matecconf/201929905010
3. V Ceclan, A Popan, S Grozav, A Popan - *Study on milling strategies influence on the quality characteristics in case of composite material* - MATEC Web of Conferences; Les Ulis Vol. 299, Les Ulis: EDP Sciences. (2019) 04012 (2019) https://doi.org/10.1051/matecconf/201929904012
4. Grozav, Sorin Dumitru; Ceclan, Vasile Adrian; Ciusca, Gabriel Nicodim, CALCULATION OF THE CONTACT SURFACE IN THE ORBITAL DEFORMATION OF THE CYLINDRICAL WORKPIECE ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 61 Issue: 4 Pages: 695-700 Published: NOV 2018
5. Ceclan, Vasile Adrian; Grozav, Sorin Dumitru; Kuric, Ivan, RESEARCH ON INNER SURFACE OF HYDROFORMED TUBES ADVANCES IN SCIENCE AND TECHNOLOGY-RESEARCH JOURNAL Volume: 11 Issue: 4 Pages: 311-317 Published: DEC 2017
6. Grozav, Sorin-Dumitru; Ciusca, Gabriel Nicodim; Ceclan, Vasile, The lack of uniformity of the deformations and the degree of deforming in case of orbital deformation MODERN TECHNOLOGIES IN MANUFACTURING (MTEM 2017 - AMATUC) Book Series: MATEC Web of Conferences Volume: 137 Article Number: UNSP 05002 Published: 2017
7. Bere P., Neamtu C., Dudescu C., Design and manufacturing front hood for electric vehicle by carbon fibber, 1st Innovative Manufacturing Engineering & Energy International Conference – IManE&E 2017, MATEC Web Conf. 112 07021 (2017), DOI: 10.1051/matecconf/201711207021
8. Bere P, Neamțu C., Dudescu C M., Comes R., Solcan S., Carbon epoxy front hood for an electrical city vehicle, Modern Technologies in Manufacturing (MTeM 2017 - AMaTUC), Volume 137, 2017, MATEC Web Conf. 137 08001 (2017), DOI: 10.1051/matecconf/201713708001
9. Hancu L, Marc G., Popescu A, Bere P., Rodean S., Proposal for a composite structure and graphic design for a parking barrier, Modern Technologies in Manufacturing (MTeM 2017 - AMaTUC), Volume 137, 2017, MATEC Web Conf. 137 08004 (2017), DOI: 10.1051/matecconf/201713708004
10. C. S. M. Borzan, M. C. Dudescu, V. Ceclan, A. Trip, M. Ridzon, and P. Berce, "PA 2200 vs. PMMA: Comparison Between the Mechanical Proprieties Obtained for the 2 Biocompatible Materials", *Materiale Plastice*, vol. 53, pp. 1-5, Mar 2016

Products and technologies:
1. Seat passenger rail industry.
2. Industrial plant RTM for SC VRG Bistrita Company.
3. Self-locking intramedullary nail for major trauma, such as when intramedullary nailing.

Patents:
1. S. Grozav, Coste Camilio, "*Self-locking intramedullary nail*" patent: RO127480, 30.01.2014, Excellence Award and Gold Medal with special mention at the salon PROINVENT 2014
2. I. Vuscan - Patent: no. 123184 OSIM, 2011; Diploma of excellence and gold medal for the group of inventions PROINVENT edition a-VIII-a, Cluj-Napoca 2010; Diploma and silver medal – EUROINVENT, Iaşi, 2011; Diploma and medal AGEPI from the State Agency for Intellectual Property from Republica Moldova, - PROINVENT, Cluj-Napoca, 2011.
3. P. Bere, P. Berce, H. Iancau, "*Method and device for obtaining bent tubular parts with variable section of fiber reinforced polymer composites*", Request invention no. A 2011 1004/05.02.2011, Excellence Award and Silver Medal with special mention at the salon PROINVENT 2014

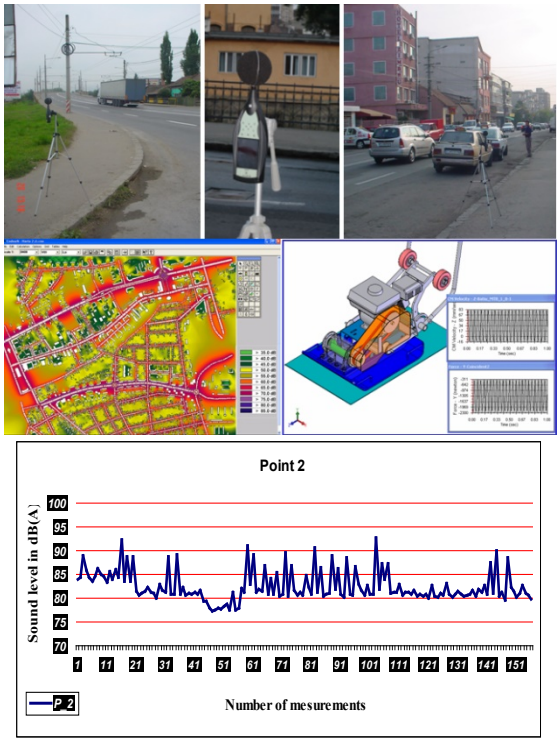
The offer addressed to the economic environment

Research & development	Study regarding the mechanical behavior of polymer composite structures. Micromechanics and mechanical of high performance composite structures. Study of phenomena that accompany the process of orbital forming metal matrix composite materials. Applied research regarding the influence of process parameters on the mechanical characteristics of composite structures. Determination of mechanical characteristics by testing tensile, compression, bending and delamination specific the composites. Experimental research regarding the manufacture of on polymer composite. Manufacturing of automotive gears by orbital forming.
Consulting	This collective provides consultancy in the field of replacing metal parts with composite structures based on fiberglass, carbon, Kevlar and so on, used in top fields such as aeronautics, aerospace and transportation.
Training	It provides training in the application materials and competitive technologies. The research structure proposed has the potential to provide economic environment training in a highly dynamic field, but relatively new in our country, as is the use of competitive material in peak areas in order to increase the quality and competitiveness of industrial products.

ACOUSTICS, APPLIED MECHANICS AND CAD RESEARCH LABORATORY

Contact details

Name	**Acoustics, Applied Mechanics and CAD Research Laboratory**
Acronym	**AMAC**
Logo	
Site	https://research.utcluj.ro/index.php/industrial-engineering-and-management.html
Address	103-105 Muncii Av., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Industrial Engineering, Robotics and Production Management Mechanical Systems Engineering Department**
Telephone	+40 264 401783 +40 264 401781
Fax	-
Director	Prof. Dr. Eng. Diana Ioana Popescu
e-mail	Diana.Popescu@mep.utcluj.ro



Areas of expertise

Acoustics
- Physical acoustics, Industrial/Environmental noise and vibration control, Urban acoustics, Bioacoustics

Applied mechanics
- Mechanical vibrations, Machine dynamics, Analytical mechanics, Computational mechanics, Biomechanics

Computer Aided Design
- Surface and solid modeling, Parametric modeling, Theoretical foundation of CAD, Mechanical drafting, CAE

Team

Prof.Dr.Eng. Diana Ioana Popescu, Prof.Dr.Ing.Math. Nicolae Ursu-Fischer, Şl. Dr. Ing. Lucia Margareta Ghiolțean, Conf.Dr.Eng. Radu-Mircea Morariu-Gligor, Assist.Dr.Ing. Luminiţa Molnar, Şl.Dr.Ing. Iuliana Fabiola Moholea, Ing. Viorel Aşchilean

Representative projects

"Modelling, simulation and precision in the study of mechanical systems vibrations, with applications for crankshafts of internal combustion engines and piston compressors", CNCSIS A41-1049, (2004-2005)
"Modelling, algorithms and precision in the study of mechanical systems vibrations", CNCSIS A-1259, Ministry of Education and Research, (2006)
"Development of engineering models and methods for assessment and prediction of the environmental noise", PNII-Idei, (2007-2010)
"Fundamental and applied research on the modernization of the vibrating plate compactors - design and execution", Managerial Agency for Scientific Research, Innovation and Technological Transfer, RELANSIN, (2001-2003)
"Research and studies on perception, assessment, control and prediction of industrial noise", CNCSIS, A33, Ministry of Education and Research, (2004-2005)

Significant results

The most representative publications of the past years:
1. Ursu-Fischer, Nicolae; Popescu, Diana Ioana; Moholea, Iuliana Fabiola, The accurate computing of clothoid coordinate values and of the distance between a point and a clothoid, *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 64, Issue 2, pp. 207-218, Jun. 2021.

2. Ursu-Fischer, N., Popescu, D.I., A Geometric Method for Optimize the Ackermann-Type Steering Mechanism, *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering,* vol.64, Issue II, pag. 219-226, , June 2021
3. Popescu, D.I., Case Study of the Environmnetal Noise and its Perception in the City of Cluj-Napoca, Romania, *Archives of Acoustics*, Vol.45 No.4, pag. 625-631, 2020
4. Popescu, D.I.,Popescu, A.D., Analysis of the Subjective Perception of Noise in Cluj-Napoca, Romania, *ICSV26 – The 26th International Congress on Noise and Vibration, Montreal, Canada*, 7-11 July 2019, Proceedings, Montreal bridges 2019, Edited by: ICSV26 Local Committe in Montreal, ISSN 2329-3675, ISBN 978-1-9991810-0-0, Published by: Canadian Acoustical Association, Copyright © International Institute of Acoustics and Vibration (IIAV), 2019, Paper no. 541, 6 pag.
5. Popescu, D.I., "Environmental Noise in Urban Areas, between Acceptance and Taking Measures", *18th International Conference Noise Control , 26-29 May 2019*, Janow Podlaski, Poland, Conference Proceedings on CD, Central Institute of labour Protection – CiopPib, Polish Academy of Science, ISBN 978-83-7373-273-5, 10 pag.
6. Crişan, A., Morariu-Gligor, R., A Study on the Impact Force in Case of Tamping Rammers, *Romanian Journal of Acoustics and Vibration*, Vol. 16 / I, 2019, pag. 78 – 83, 2019;
7. Ursu-Fischer, Nicolae; Popescu, Diana Ioana; Radu, Ioan; Moholea, I.F., "Multiple solutions of interpolation with second and third degree Bézier polynomials", *Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering,* Vol. 61, Issue 2, pp. 159-166, Jun 2018.
8. Ursu-Fischer, Nicolae; Popescu, Diana Ioana; Radu, Ioan, "Spline interpolation with third-degree Bézier functions", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 61, Issue 2, pp. 167-174, Jun. 2018.
9. Popescu, Diana Ioana; Ursu-Fischer, Nicolae; Moholea, Iuliana Fabiola, "Road Traffic Noise in Cluj-Napoca City – Ten Years after the First Strategic Noise Map", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60, Issue 4, pp. 515-520, Nov. 2017.
10. Popescu, Diana Ioana; Ursu-Fischer, Nicolae; Moholea, Iuliana Fabiola, "Road Traffic Noise Reduction Strategy in Cluj-Napoca – A Briaf Analysis", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60 , Issue 4, pp. 521-526, Nov 2017.
11. Morariu-Gligor, R.M.,Crisan, A.V., Serdean, F.M., "Optimal Design of an One-way Plat Compactor", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60 , Issue 4, pp. 557-564, Nov 2017.
12. Morariu-Gligor, R.M., "Factors Influencing the Degree of Soil Compaction", *Acta Technica Napocensis, Series Applied Mathematics, Mechanics and Engineering*, Vol. 60 , Issue 1, pp. 125-130, March 2017.
13. Popescu, D.I., "Study of Particle Motion on a Helical Vibrating Surface", The Third International Conference of Mechanical Engineering, Faculty of Mechanics, University of Craiova, 8-9 October 2015, Proceedings on CD, *Trans Tech Publication: Current Solutions in Mechanical Engineering, Applied Mechanics and Materials*, vol. 823, pp. 13-16, Jan. 2016, DOI 10.4028/www.scientific.net/Amm.823.
14. D. I. Popescu and I. Cosma, "Traffic Noise Models for Curved Roads", *Archives of Acoustics*, vol. 41, pp. 309-314, 2016.

Books:
- Ursu-Fischer, N., Ursu M., "Metode numerice în tehnică", Casa Cărţii de Ştiinţă, Cluj-Napoca, 2019
- Ursu-Fischer, N., "Elemente de mecanica analitica", Casa Cărţii de Ştiinţă, Cluj-Napoca, 2015

Significant solutions:
Development of specific methods for assessment and prediction of road and railway traffic noise
Assessment of environmental and industrial noise impact on human
Solutions to improve the urban acoustic environment and reduce the exposure to noise
Noise maps
Development of models, simulations and dynamical studies of vibrating machines: vibrating compactors, elevators, feeders and mills.

The offer addressed to the economic environment

Research and development	The research team is interested in new ideas for cooperation in the field of acoustics and vibrations, for completing projects aiming the assessment, prediction and reduction of pollution.
Consulting	Consulting in the fields of: Acoustics Noise mapping Vibrations Machine dynamics Vibro-acoustic diagnostics Computer aided design and engineering graphics.
Applied engineering services	Assessment of noise and vibration Computer aided drafting, design and engineering 3D modelling
Training	CAD training courses (AutoCAD) developed by Autodesk authorised instructors

MANAGEMENT RESEARCH CENTER FOR ORGANIZATIONAL SUSTAINABILITY

Contact details

Name	**Management Research Center for Organizational Sustainability**
Acronym	**MARCOS (CEMASO)**
Logo	-
Site	www.cemaso.utcluj.ro
Address	Cluj-Napoca, str. Dorobanţilor 71-73
Faculty Department	**Faculty of Machine Building** **Management and Economic Engineering Department**
Telephone	+40 264 401600
Fax	+40 264 401617
Director	Prof. Dr. Eng. Ec. Laura Bacali
e-mail	Laura.Bacali@mis.utcluj.ro

Areas of expertise

Business and Management
New Marketing and Entrepreneurial Development Managerial Methods for Organizational Competitiveness

Team

Prof. Eng. Ec. Laura Bacali, Prof. Dr. Eng. Florin Lungu, Prof. Dr. Eng. Ec. Doru Farcas, Assoc. Prof. Dr. Eng. Sorin Suteu, Assoc. Prof. Dr. Eng. Radu Vlad , Assoc. Prof. Dr. MsC Ec. Camelia Ucenic, , Assoc . Roxana Cordos, , Assoc. Prof. Dr. Eng. Emilia Ciupan, Assoc. Prof. Dr. Eng., Ec. Cristina Feniser, Assoc. Prof. Dr. Eng.,Ec. Adriana Sava, Assoc. Prof. Dr. Eng. Daniel Filip, Lect. Dr. Eng. Violeta Firescu, Lect. Dr. Eng. Calin Otel, Lect. Dr. Eng.,Ec. Daniela Jucan, Lect. Dr. Ec. Monica Bogdan, Lect. Dr. Eng.Gabriela Bacila, Lect. Dr. Eng. Carmen Maria Muresan, Lect. Dr. Eng. Dan Simion, Lect. Dr. Eng. Ec. Claudiu Ioan Abrudan, Lect. Dr. Eng. Remus Lungu.

Representative projects

Mathematics online learning model in engineering education
Proiect Structuration et accompagnement de l'Entrepreneuriat etudiant au Maghreb, SALEEM, funded by AUF, 2017-2021
Research and opportunity to regarding the activity expansion of in the North-Western area of Romania. Identification an IT solution for the management of enterprise resource planning (ERP system)

Significant results

1. Arik Sadeh, Claudia Florina Radu, Fenișer Cristina , Andrei Borșa, Governmental Intervention and Its Impact on Growth,Economic Development, and Technology in OECD Countries , Sustainability, 13(1), 166, 2021.
2. Varga, V., Lungu, F., Performance increasing researches in the value chain stages within the petroleum industry, International Journal of Advanced and Applied Sciences, nr. 7(12), Pages: 62-67, ISSN 2313-626X, E-ISSN: 2313 – 3724, 2020.
3. Carmen Gabriela Băcilă, Călin Ciprian Oţel,An overview on the importance of sustainability and the environment, Proceedings of the 7th Review of Management and Economic Engineering International Management Conference „Management Challenges Within Globalization", Ed. Todesco , ISSN 2247-8639, 590- 597, 17-19.09, 2020
4. Sava Adriana, Bogdan Monica şi Kocsi Kinga, Online disclosure of non-financial information in Romanian large companies, Acta Technica Napocensis – Series: Applied Mathematics, Mechanics and Engineering vol. 61, Issue Special, September2018, pp. 203-208, 2018
5. Bogdan Monica şi Sava Adriana, Supply chain finance – a solution to improve business efficiency, Acta Technica Napocensis – Series: Applied Mathematics, Mechanics and Engineering, vol. 61, issue IV, November 2018, pp. 625-630, 2018
6. Gaspar M., Firescu V., New skills and qualifications required by the current approaches in the software development industry, Acta Technica Napocensis – Series: Applied Mathematics, Mechanics and Engineering, vol. 61, Issue Special, September 2018, pp. 97-106, 2018
7. E. Ciupan, C. Ciupan, E.-M. Câmpean, L. Stelea, C.-E. Policsek, F. Lungu, D.-C. Jucan, Opportunities of Sustainable Development of the Industry of Upholstered Furniture in Romania. A Case Study. *Sustainability* ISSN 2071-1050, *10*(9), 2018

8. Ciupan C., Steopan M., Pop E., Campean E., Filip I., Ciupan E., Comparative analysis of different ribs used to rigidize the resistance structure of a sofa side made of composite materials based on vegetable fibers, Acta Tehnica Napocensis, Applied Mathematics, Mechanics and Engineering, Vol. 61, No. 1, Ian.2018
9. Ciupan C., Comsa D.-S., Ciupan E., Simulating the Thermoforming Process of a Box for Upholstered Furniture, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 61, No 3, Special Issue, pp. 21-28, Sept.2018
10. Ciupan M., Popa M., Sosa I.P., Contiu G., Ciupan E. , Development and Testing of Mineral Casting for Use in Structural Elements and Mold Making, Acta Technica Napocensis, Series: Applied Mathematics, Mechanics and Engineering, Vol 61, No 3, Special Issue, pp. 29-34, Sept 2018.
11. Javier Bilbao, Cristina Fenișer, Olatz García, Carolina Rebollar, Eugenio Bravo, Concepción Varela, Management Applied Directly to University World: Chance to Empower Students INTED, 12th International Technology,Education and Development Conference, INTED, 5-7 March, 2018, Valencia, Spain, ISBN: 978-84-697-697-9480-7 ISSN: 2340-1079, Pp.: 5998 – 6001, 2018
12. Cristina Fenișer, Javier Bilbao, Ken Brown, Eugenio Bravo Carolina Rebollar, Concepción Varela, Olatz, Is Flipped Classroom an Effective Model to Respond to the Training Requirements of Our Century s Engineering? EDULEARN, 10th International Conference on Education and New Learning Technologies, EDULEARN Palma, Spain. 2-4 July, 2018, Pp: 5024-5031
13. Ken Brown, Cristina Feniser, Vic Lally , Javier Bilbao, Arik Sadeh, Sharing cultures and society in Technology enhanced Learning mediated Environments ICERI, November 12-14, 2018, Sevilla, Spain, Pages: 7369-7373, 2018
14. Cristina Fenișer, Arik Sadeh, Javier Bilbao, Florin Lungu, Alina Solovăstru, Innovative Perceived Conduct of Industrial Firms, Acta Technica Napocensis, ISSN 1221-5872, ISSN (online) 2393-2988, Series: Applied Mathematics, Mechanics, and Engineering, Vol.61, Issue Special, September, 2018, pp. 65-68, 2018
15. Elena Simina LAKATOS, Laura BACALI, Ligia Maria NAN, Alina Maria DANCIU, Matthew GREENLEY., THE DEVELOPMENT OF THE PRODUCTION PROCESSES IN AN ACTIVE CIRCULAR ECONOMY SYSTEM, A VIEW OF RECIRCULATION, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, Vol. 61,nr. 4, pg. 735-742, ISSN: 1221-5872, 2018.
16. Lakatos, ES ; Bacali, L ; Ciomos, AO ; Rosca, MG ; Mateiciuc, C., THE BEHAVIOUR OF NEW GENERATIONS CONSUMERS RELATED TO THE CIRCULAR ECONOMY, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, Vol. 61, pg. 727-734, ISSN: 1221-5872, 2018
17. Bacali, LA ; Botos, A ; Nan, LM ; Bacali, L., THE INFLUENCE OF THE ENVIRONMENTAL LEVEL ON THE PROFESSIONAL RESULTS OF THE ROMANIAN STUDENTS, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, Vol. 61, pg 617-624, ISSN: 1221-5872, 2018.
18. Bacali, LA ; Botos, A ; Lakatos, SE ; Bacali, L., THE IMPORTANCE OF AMBIANCE IN ROMANIAN UNIVERSITY EDUCATIONAL SPACES, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, Vol. 61, pg. 609-616, ISSN: 1221-5872, 2018.
19. Adrian Pisla, Raluca Dorina BAIDOC, Lorand Kacso-Vidrean, Daniela Corina Jucan, Factors In The Life Cycle Of Airport Activities, ACTA TECHNICA NAPOCENSIS-Series: APPLIED MATHEMATICS, MECHANICS, and ENGINEERING, Vol. 61, nr. 4, Pag.753-762, Nov. 2018
20. Lorand Kacso-Vidrean, Raluca, Dorina Baidoc, Daniela Corina Jucan, Adrian PÎSLĂ, Dust Deposition Calculation For Pannels Robotized Cleaning And Maintenance, ACTA TECHNICA NAPOCENSIS-Series: APPLIED MATHEMATICS, MECHANICS, and ENGINEERING, Vol. 61, nr. 4, Pag.701-710, Nov.2018
21. Daniel FILIP, Modern methods and tools to improve the production processes from small series and unique production, ACTA TECHNICA NAPOCENSIS, Series: Applied Mathematics, Mechanics, and Engineering, Vol. 61, nr. 4, 2018, 575-584 Dec 2018
22. Daniel FILIP, Applying to the mathematical methods to optimize the launching process in manufacturing ACTA TECHNICA NAPOCENSIS, Series: Applied Mathematics, Mechanics, and Engineering, Vol. 61, nr. 4, 2018, 585-592, Dec 2018
23. Radu Constantin Vlad, An Integrated Planning and Scheduling Model for Wiring Systems Assembly, Acta Technica Napocensis, Vol. 61, no. 3, pag 263-270,2018
24. Paul Farcas, Carmen Maria Muresan, THE IMPORTANCE OF THE ARCHETYPAL TRAITS ON MILLENNIALS IN THE CONTEXT OF BRAND DIFFERENTIATON – A QUALITATIVE APPROACH, Acta Technica Napocensis – Series: Applied Mathematics, Mechanics and Engineering, vol. 61, issue IV, November 2018, pp. 59-64, 2018

The offer addressed to the economic environment

Research & development	Development of cooperation with other research groups Strategies for sustainability The elaboration and implementation of managerial systems which drive to performance on the three sustainability poles: long run economic performance, social and environmental performance Organizational development toward the learning organization
Consulting	Collaboration with the economic environment and other sectors of the social life for relevant topics regarding sustainability The transfer of the research results toward the end users, Support for start-ups and innovative spinoffs Market research, Business plan, Feasibility studies, Cost benefit analysis
Training	Training and research opportunities for PhD students Training and research opportunities for young researchers Training for economic environment Cource :Integration of Management Systems, Change and Learning Organization, Communication Strategies, Cleaner Productionm, Corporative governance, Business simulation games

THE CENTER FOR RESEARCH IN ENGINEERING AND TECHNOLOGY MANAGEMENT

Contact details

Name	**The Center for Research in Engineering and Technology Management**
Acronym	**CCIMT**
Logo	CCIMT
Site	http://ccimt.cunbm.utcluj.ro/
Address	62A, Dr. Victor Babeş St., 430083, Baia Mare, Romania
Faculty Department	**Faculty of Engineering** **Department of Engineering and Technology Management**
Telephone	+40 362 804002
Fax	+40 262 276153
Director	Prof. Dr. Eng. Mircea Lobonțiu
e-mail	Mircea.Lobontiu@cunbm.utcluj.ro

Areas of expertise

Applied research in industrial engineering: a) development of applications in manufacturing processes; b) development of applications in mechanical systems; c) development of applications in technology management; **Competitive and pre-competitive research:** a) technological equipment; b) machinery and equipment manufacturing technology; c) special technological processes; d) optimization of the manufacturing technological system; e) monitoring technological systems and equipment; f) information technology integration into production systems (PDM, PLM etc.) **Product innovation and technological innovation in engineering and their impact on technology management Research knowledge capitalization and dissemination**

Team

Prof. Dr. Eng. Mircea Lobonțiu, Prof. Dr. Eng. Vasile Năsui, Prof. Dr. Eng. Radu Iacob Cotețiu, Prof. Dr. Eng. Nicolae Stelian Ungureanu, Prof. Dr. Eng. Adrana Cotețiu, Assoc. Prof. Dr. Eng. Mihai Bănică, Assoc. Prof. Dr. Eng. Horia Cioban, Assoc. Prof. Dr. Eng. Lucian Butnar, Assoc. Prof. Dr. Eng. Flavia Suciu, Assoc. Prof. Dr. Eng. Dinu Stoicovici, Assist. Prof. Dr. Eng. Marius Cosma, Assist. Prof. Dr. Eng. Ec. Gabriela Lobonțiu, Assist. Prof. Dr. Eng. Sandor Ravai Nagy, Assist. Dr. Eng. Vlad Diciuc
Phd. student: Eng. Nicolae Medan

Representative projects

"Product Development Research Activities - Technological production lines with CAD site", contract with industry, (2013-2014)
"Increasing the capacity of institutional management for the work of CD&I in engineering and technological management", ANCS
„Study and solutions regarding the hydraulic calculations made for the treatment plants of the Fierbinţi objective", SC ADISS S.A. Baia Mare, (2012)
"Competitive research activities regarding the 2+3cm multifunctional truck product and the electrical installation command of the 5mc cesspool emptier", (2011)
"Study the solutions to drive mechanical and hydraulically a sewage cleaning equipment on Renault chassis", SC Grup4 SA., SC ADISS SA., (2012)

Significant results

The most representative publications of the past 5 years:

1. Ungureanu, Nicolae Stelian; Petrovan, Adrian; Ungureanu, Miorita, Contributions to the Development of an Ontology in Logistics of Manufacturing International Conference on Manufacturing Engineering and Materials (ICMEM) Location: Novy Smokovec, SLOVAKIA Date: JUN 18-22, 2018 Book Series: Lecture Notes in Mechanical Engineering Pages: 299-306 Published: 2019
2. Ruggiero, Alessandro; D'Amato, Roberto; Calvo, Roque; Ungureanu Nicolae et al., Measurements of the Friction Coefficient: Discussion on the Results in the Framework of the Time Series Analysis ADVANCES IN MANUFACTURING ENGINEERING AND MATERIALS, ICMEM 2018 Book Series: Lecture Notes in Mechanical

Engineering Pages: 443-455 Published: 2019
3. Ruggiero, Alessandro; D'Amato, Roberto; Ungureanu, Nicolae , Fluid Film Pressure Description in Finite Turbulent Lubricated Journal Bearings by Using the Warner's Theory ADVANCES IN MANUFACTURING ENGINEERING AND MATERIALS, ICMEM 2018 Book Series: Lecture Notes in Mechanical Engineering Pages: 465-475 Published: 2019
4. Nadolny, Krzysztof; Kaplonek, Wojciech; Krolczyk, Grzegorz; Ungureanu Nicolae et al., The effect of active surface morphology of grinding wheel with zone-diversified structure on the form of chips in traverse internal cylindrical grinding of 100Cr6 steel PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART B-JOURNAL OF ENGINEERING MANUFACTURE Volume: 232 Issue: 6 Pages: 965-978 Published: MAY 2018
5. Medan, Nicolae; Lobontiu, Mircea; Banica, Mihai, Full factorial DOE to determine the influence of the process parameters in cleaning water jets used in sewer cleaning, 4th International Conference on Computing and Solutions in Manufacturing Engineering (CoSME) Location: Brasov, ROMANIA Date: NOV 03-04, 2016 Book Series: MATEC Web of Conferences Volume: 94 Article Number: UNSP 07005 Published: 2017
6. V. Ilic, N. Jorgovanovic, A. Antic, S. Moraca, and N. Ungureanu, "A NOVEL FULLY FAST RECOVERY EMG AMPLIFIER FOR THE CONTROL OF NEURAL PROSTHESIS", *Tehnicki Vjesnik-Technical Gazette*, vol. 23, pp. 1131-1137, Jul-Aug 2016.
7. Basarman, Adrian-Paul; Lobontiu, Mircea, Aspects regarding the surface roughness on a steel part cutted using AWJ technology 13th International Conference on Modern Technologies in Manufacturing (MTeM-AMaTUC) Location: Cluj Napoca, ROMANIA Date: OCT 12-13, 2017 MODERN TECHNOLOGIES IN MANUFACTURING (MTEM 2017 - AMATUC) Book Series: MATEC Web of Conferences Volume: 137 Article Number: UNSP 01001 Published: 2017
8. A. Cotetiu, R. Cotetiu, N. Ungureanu, “Research about automatic adjustment solution of the advance force at the perfusion drills using fluid elements”, in *Archives of Mining Sciences*, vol. 58, no. 4, 2014, pp 1201-1208
9. G. Lobonţiu, “Planned Obsolescence and the Product Lifecycle”, in *Applied Mechanics and Materials*, vol. 371, 2013, pp. 857-861
10. R. S. Nagy, M. Lobonţiu, “Technological Solutions for Manufacturing Gears with Asymmetric Teeth” in *Academic Journal of Manufacturing Engineering*, vol.11, no. 3, 2013, pp. 68-73
11. V. Diciuc, ”A Comparison between the Wear of the Ball Nose End Mill generated in 4 Axes Milling and in 5 Axes Milling” in *Applied Mechanics and Materials*, vol. 371, 2013, pp. 106-110

Products and technologies:

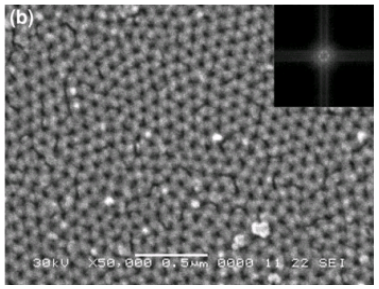
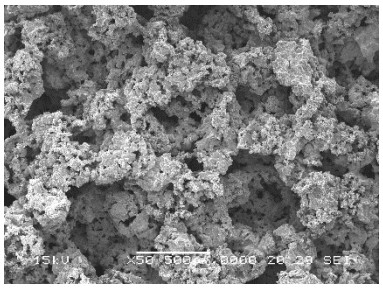
1. The water treatment plants;
2. Multifunctional truck product for sewage cleaning;
   Technologies for manufacturing of the asymmetric tooth gear.

The offer addressed to the economic environment

Research & development	Development of products and equipment needed in the field of wastewater treatment; Product development in the field of wastewater disposal and transport: multifunctional trucks, cesspool emptiers; The study of cutting tools durability for real technological conditions; The study of the machined surfaces’ quality depending on the process parameters and on the cutting conditions; Studies and research activities on the mechanical parameters of the components of the industrial systems; Studies and research activities in logistics, maintenance and reliability.
Consulting	Consulting in: manufacturing technologies, product development, Technology Management, human resources issue in Engineering, logistics, maintenance and reliability, Tribology.
Training	Training courses for NCMT operators, usage, programmers; Training in CAD.

THE POROUS MATERIALS AND COMPOSITES RESEARCH GROUP

Contact details

Name	**The Porous Materials And Composites Research Group**	
Acronym	**COMPOR**	
Logo	COMPOR Materiale compozite şi poroase	
Address	103 –105, Muncii Av., 400641, Cluj-Napoca, Romania	
Faculty Department	**Faculty of Materials and Environmental Engineering Materials Science and Engineering Department**	
Telephone	+40 264 401702	
Fax	+40 264 415054	
Director	Sl.. Dr. Eng. Gyorgy Thalmaier	
e-mail	Vida.Simiti@stm.utcluj.ro	

Areas of expertise

Field: Materials Science and Engineering
Expertise in Powder Metallurgy
- Sintered porous materials, cellular materials (metallic foams)
- Material metal and ceramic matrix composites produced by powder metallurgy.

Team

Assist. Prof. Dr. Eng. Gyorgy Thalmaier, Prof. Dr. Eng. Ioan Vida-Simiti , Assist. Prof. Dr. Eng. Niculina Sechel,

Representative projects

MATAVSUD: "**Innovative Research on development of new materials for welding and other production processes**" - CEEX Contract no. 8/2005-2008
BRONZINV 'Fundamental and applied research on 12-15% tin bronzes for obtaining anti-friction layers "_ CEEX Contract No. 11/2005-2008
"**Manufacturing Aluminium - Graphite composites by casting and sintering**", Contract CEEX Nr.2/2005-2008
NANOGRAD "Advanced research on the development of nanostructured graded composite materials for excessive wear applications " Contract CEEX Nr.91/2006: -2008
ELSUD "**Multi-layered electrodes for electrical resistance spot and line welding"** Program 4 Partnerships in priority areas, PNCDI 2 - 2007-2009
ELMOD – "**Innovative technologies for the development of modular manufacture of forming tools"**, Program 4 Partnerships in priority areas, PNCDI 2, 2007-2009
"**Exploratory research projects. Studies and research on obtaining structurally graded materials by controlled sedimentation of metallic and ceramic powders**" Program Ideas ID_214, no. 749 / 19.01.2009
"**Development and support of multidisciplinary postdoctoral programs in priority technical areas of the national strategy for research - development - innovation 4D-postdoc**" Postdoctoral research fellowship funded by the Managing Authority for Sectorial Operational Programme Human Resources Development under the project Contract Code: POSDRU/89/1.5/S/52603

Significant results

The most representative publications of the past 5 years:

1. Gy. Thalmaier, N. Cobîrzan, A.-A. Balog, H. Constantinescu, M. Streza, M Nasui, B.V. Neamtu, Influence of sawdust particle size on fired clay brick properties, Materiales de Construcción, accepted for publication oct. 2019
2. Thalmaier, Gyorgy; Sechel, Niculina Argentina; Vida-Simiti, Ioan, Heat Transfer Enhancement of Paraffin Phase Change Composite Material Using Recycled Aluminum Sawing Chips JOM Volume: 71 Issue: 3 Pages: 1049-1055 Published: MAR 2019
3. Cobirzan, Nicoleta; Thalmaier, Gyorgy; Balog, Anca-Andreea; et al., Thermophysical properties of fired clay bricks with waste ceramics and paper pulp as pore-forming agent JOURNAL OF THERMAL ANALYSIS AND CALORIMETRY Volume: 134 Issue: 1 Pages: 843-851 Published: OCT 2018
4. Thalmaier, Gyorgy; Vida-Simiti, Ioan; Sechel, Niculina Argentina , Influence of the palladium coating on the hydrogen embrittlement of Ni61Nb33Zr6 amorphous tapes obtained by melt spinning POWDER METALLURGY AND ADVANCED MATERIALS Book Series: Materials Research Proceedings Volume: 8 Pages: 89-94 Published: 2018
5. M. Bosca, L. Pop, L. Bolundut, N. Tothazan, G. Borodi, I. Vida-Simiti, et al., "Effects of Gd3+ : Ag co-doping on structural and magnetic properties of lead tellurite glass ceramics," *Ceramics International*, vol. 42, pp. 1169-1176, Jan 2016.
6. C. V. Prica, T. F. Marinca, F. Popa, N. A. Sechel, O. Isnard, and I. Chicinas, "Synthesis of nanocrystalline Ni3Fe powder by mechanical alloying using an extreme friction mode," *Advanced Powder Technology*, vol. 27, pp. 395-402, Mar 2016.
7. Gherasim, Gabriel; Thalmaier, Gyorgy; Sechel, Niculina; et al., RESEARCHES ON OBTAINING SINTERED Al80Fe10Ti10 FOAMS ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 58 Issue: 4 Pages: 585-590 Published: NOV 2015
8. S. Şuta, G. Gherasim, G. Thalmaier, N. Sechel, I.Vida – Simiti, "Ti-Al membranes for microfiltration", *Conferinta international, Advanced Materials and Structures* 16-17 October 2015, Timişoara, Romania
9. Gy. Thalmaier, N.A.Sechel, I. Vida-Simiti, "Metalurgia pulberilor - aplicații practice", Editura UTPress, 2015.

Patents:

1. I. Vida-Simiti, C. Ciupan, Process for Making Porous Tubes by the Rolling With Elastic Layer of Sintered Sheet Metal. RO 123245 B1/29.04.2011.
2. H. Binchiciu, V. Geantă, I. Voiculescu, A. Binchiciu, R. Stefănoiu, E. Binchiciu, R. Negriu, I. Vida-Simiti, Bronze coated electrode for thick load welding, RO 125855 B1/2012.
3. Vida-Simiti I, Thalmaier Gy., Moldovan V, Sechel A. N., Nasca O., Process and device for preparing sintered materials of gradual porous structure by gravitational settling of powders, RO128489-A2, RO128489-B1

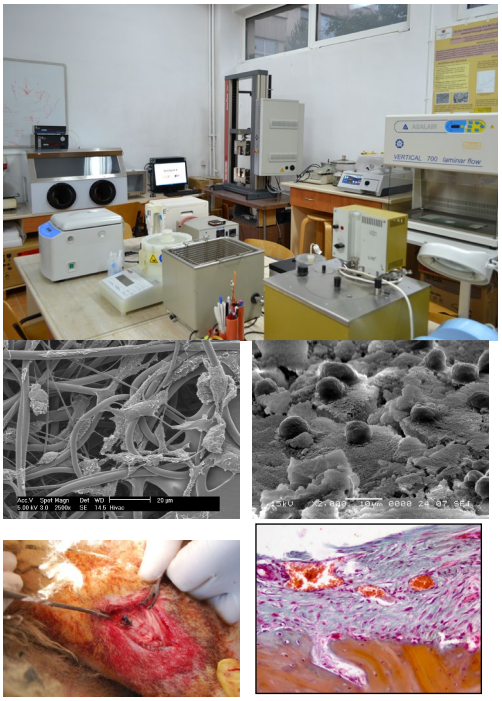
The offer addressed to the economic environment

Research & development	Fundamental research on the process of sedimentation metallic and ceramic powders for achieving gradual sintered porous structures Obtaining sintered porous media with porosity gradient for manufacturing filters for microfiltration; Preparation and characterization of metal matrix composites and ceramics for various applications.
Consulting	Dimensioning filtering elements
Training	Powder metallurgy

BIOMATERIALS RESEARCH GROUP

Contact details

Name	**Biomaterials Research Group**
Acronym	**BIOMAT**
Logo	BIOMAT BIOMATERIALS RESEARCH GROUP
Site	https://research.utcluj.ro/tl_files/research/Research%20Domain/Ingineria%20Materialelor/BIOMAT_Popa Catalin.pdf
Address	103-105 Muncii Av., room C08, 400641 Cluj-Napoca
Faculty Department	**Faculty of Materials and Environmental Engineering,** **Materials Science and Engineering Department**
Telephone	+40 264 401704
Fax	+40 264 593831
Director	Prof. Dr. Eng. Cătălin Popa
e-mail	Catalin.Popa@stm.utcluj.ro



Areas of expertise

Biomaterials
- Synthesis and characterization of biomaterials designed for soft / hard tissue implants; functionalization of implants surface in view of a designed body reaction; titanium-base structures with ultralow Young's modulus and / or osseintegration optimized surface.

Tissue Engineering
- Synthesis and characterization of scaffolds designed for the growth of tissue from stem / primary cells; design and manufacturing of synthetic – tissue hybrid materials for grafts; synthesis of drug delivery systems / biologically active hydrogel-base microspheres.

Medical Microfluidics
- Design, additive manufacturing and testing of microfluidic devices for cells selection / culturing.

Team

Prof. Dr. Eng. Cătălin Popa, Dr. Eng. Violeta Pașcalău, Lect. Dr. Eng. Violeta Merie, Lect. Dr. Eng. Gabriel Batin, Eng. Darius Jucan, Eng. Alexandra Csapai, Eng. Razvan Lupse, Eng. Victor Tosa

Representative projects

IMPROVE **–** "**Development of robot assisted minimally-invasive treatment methods through brachytherapy and target delivered drugs for non-resecable liver tumours**", PN-III-P1-1.2-PCCDI-2017-0221/59PCCDI/2018 (2018 – 2020);
STEMREG – "**Hybrid composite grafts obtained through Tissue Engineering and stem cells with application in Regenerative Medicine"**, PN II Partnerships (2012 – 2016);
BIOMAPIM – "**New biocompatible materials manufactured through SLS and SLM"**, PN II Complex Ideas (2010 – 2013);
BIOINTECH – "**Application of Tissue Engineering innovative methods in the pathology of digestive tube – multidisciplinary approach"**, PN II, Partnerships (2008 – 2011;
"Neutron Reflectivity Study of the Response of Membrane Proteins in Model Bilayers to AC Fields", ISIS Beamtime Application RB720167, 2007, U.K.
"Composite biomaterials for radiotherapy and simultaneous hyperthermia", CEEX 100/2006;
"Innovative methods in the reconstructive surgery of cancer patient – composite tissue grafting and employment of biocompatible synthetic materials", CEEX 109/ 2006;
"Optimization of the management for the polytraumatised patient through therapeutic protocols of miniinvasive methods and through the use of biocompatible materials in the reconstruction of tissue or organ post-traumatic

defects", CEEX 145/ 2006;
"Functionalized conjugated polymers – based nanostructures and related nanocomposites", CEEX 12/ 2005;
"Microfluidics with Electrode Integration for Blood Cells Dynamic Studies", EPSRC Grant IRC A1 B3R (IRC, Queen Mary, University of London), 2005;
"Neutron Reflection Study of the Electric Characterisation of Cells", ISIS Beamtime Application RB610554, CCLRC, UK, 2005;
"Porous nanocrystalline silicon – polypyrole multi-layered materials destined to the selective dielectrophoresis of blood cells", Matnantech 208(403)/2004;
"Functionally graded biomaterials, biomimetically structured, destined to personalised endosseous implants", Matnantech 163(303)/2003;

Significant results

The most representative publications of the past 5 years:

1. W.A. Uriciuc, A.B. Bosca, A.M. Babtan, C.N. Feurden, A. Ionel, H. Vermesan, C. Popa, A. Ilea, Optimization of the Manufacturing Process by Molding Cobalt-Chrome Alloys in Assembled Dental Frameworks, Prosthesis 2021, 3(3), 245-260;
2. G. Dindelegan, A. Caziuc, I. Brie, O. Soritau, M.G. Dindelegan, V. Bintintan, V. Pascalau, C. Mihu, C. Popa,
3. Multilayered Porous Titanium-Based 3rd Generation Biomaterial Designed for Endosseous Implants, Materials 2021, 14(7), Article Number 1727;
4. V. Paşcalău, C. Bogdan, E. Pall, S. Matroş, Pandrea, M. Suciu, G. Borodi, C. Iuga, R. Ştiufiuc, T. Topală, C. Pavel, C. Popa, M. Moldovan, Development of BSA gel/Pectin/Chitosan polyelectrolyte complex microcapsules for Berberine delivery and evaluation of their inhibitory effect on Cutibacterium acnes, Reactive and Functional Polymers 2020, 147, Article number 104457;
5. V. Paşcalău, M. Tertis, E. Pall, M. Suciu, T. Marinca, M. Pustan, V. Merie, I. Rus, C. Moldovan, T. Topala, C. Pavel, C. Popa, Bovine serum albumin gel/polyelectrolyte complex of hyaluronic acid and chitosan based microcarriers for Sorafenib targeted delivery, Journal of Applied Polymer Science 2020, Article number 49002;
6. M. Todea, A. Vulpoi, C. Popa, P. Berce, S. Simon, Effect of different surface treatments on bioactivity of porous titanium implants, Journal of Materials Science and Technology 2019, 35(3), 418-426;
7. Chicinas, H. F.; Contiu, G.; Sechel, N. A.; et al., Preparation and characterisation of WC-10Co powders obtained by aqueous milling, Ceramics International 2019, 45(4), 5177-5184;
8. Pascalau, Violeta; Dindelegan, George; Dirzu, Noemi; et al., Bioactive Ti-base biomaterial with sustained anti-bacterial response for endosseous applications, Reactive & Functional Polymers 2018, 125, 37-46;
9. Chicinas, H. F.; Marinca, T. F.; Gotze, P.; et al., Influence of aqueous milling duration on the sintered WC-10Co hard metal powders, Journal of Materials Science 2018, 53(4), 2901-2910;
10. V. Paşcalău, O. Soritau, F. Popa, C. Pavel, V. Coman, I. Perhaita, G. Borodi, N. Dirzu, F. Tabaran, C. Popa, Curcumin delivered through bovine serum albumin/polysaccharides multilayered microcapsules, Journal of Biomaterials Applications 2016, 30 (6), 857-872;

Significant solutions:
Design – synthesis – characterisation of controlled porosity PM titanium for endosseous implants;
Functionalization of titanium implants for enhancing osseointegration;
Functionalization of surgical meshes in view of controlled tissue adhesion;
Design – synthesis – characterisation of biodegradable polymers scaffolds for culturing cells / organelles;
Design - synthesis of delivery systems for active agents in Tissue Engineering and wound healing;
Design, manufacturing and testing of microfluidic devices for the selection of blood cells.
Technologies:

1. PM processing of titanium and titanium – base alloys;
2. Synthesis of drug / active factors containing microspheres;
3. Electrospinning of composite structures;
4. Sol-gel coating and surface conditioning of metallic biomaterials;
5. Additive manufacturing of complex microfluidic systems;

Patents:
C. Popa, L. Cont, G. Dindelegan, V. Simon, I. Brie, C. Pavel, V. Candea – Method for the manufacturing of scaffolds and composite materials destined to Tissue Engineering, RO patent Nr. 127534;

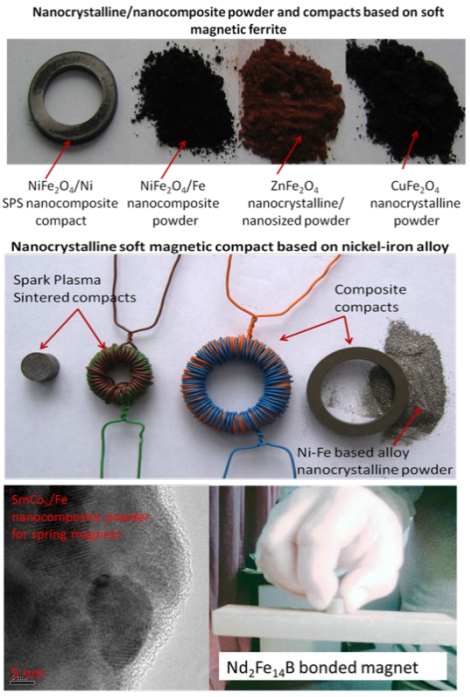
The offer addressed to the economic environment

Research & development	Design and synthesis of new bioactive or hybrid materials for implants / grafts; Development of application designed complex structures for medical accessories: dental and maxillary-facial implants, orthopedic implants, "wound dressing", personalized medical instruments, surgical clips and staples; Development of new 3D scaffolds for the seeding of stem / primary cells / organelles in view of growing tissue / organ grafts; Development of new drug delivery systems with applications in Tissue Engineering, cancer, wound healing, diabetes, postoperative therapy; Development of microfluidic devices for the active selection / separation of live cells;
Consulting	Improvement of constructive / technologic design for dental, maxillary-facial and orthopaedic implants; consultancy in the field of materials and technologies for surgical units.

MAGNETIC MATERIALS AND NANOMATERIALS RESEARCH GROUP

Contact details

Name	**Magnetic Materials and Nanomaterials**
Acronym	**MatMagNano**
Logo	MagMatNano magnetic materials and nanomaterials
Site	http://www.imm.utcluj.ro/research/matmagnano/
Address	103-105 Muncii Av., Cluj-Napoca
Faculty Department	**Faculty of Materials and Environmental Engineering** **Materials Science and Engineering Department**
Telephone	+40 264 202785, +40.726226083
Fax	+40 264 415054
Director	Prof. Dr. Eng. Phys. Ionel Chicinaş
e-mail	Ionel.Chicinas@stm.utcluj.ro



Areas of expertise

Nanocrystalline and nanocomposite magnetic powders production by mechanical alloying/milling, production of bonded magnets, sintered magnetic materials (soft and hard), obtaining of nanocrystalline compacts (composite and sintered – SPS), consulting in magnetic materials field, materials characterization, structural, morphological and thermal analysis (X-ray diffraction, SEM + EDX, DTA, DSC+TG).

Team

Prof. Dr. Eng. Phys. Ionel Chicinaş, Associate Prof. Dr. Eng. Florin Popa, Associate Prof. Dr. Eng. Bogdan Viorel Neamţu, Associate Prof. Dr. Eng. Traian Florin Marinca; Lecturer Dr. Eng. Calin Virgiliu Prica, Researcher. Dr. Eng. Adriana Lidia Sorcoi, Phd. students: Eng. Victor Cebotari, Eng. Ana Cotai, Eng. Katalin Ildiko Szasz, Master students: Eng Alexandru Opriş, Eng. Victor Petru Toşa, Eng. Carmen Buzilă, Eng. Loredana Cotojman.

Representative projects

"Fibers based soft magnetic composites prepared by cold pressing and spark plasma sintering", PN-III-P1-1.1-TE-2016-0649 (2018-2020), https://neamtubogdan.wixsite.com/fsmc
"MagCore-MHF - High magnetic flux density sintered magnetic cores produced from pseudo core-shell/core-shell powders for medium to high frequencies applications", PN-III-P2-2.1-PED-2016-1816, (2017-2018), http://www.sim.utcluj.ro/contracte/PN-III-P2-2.1-PED-2016-1816/
"Soft magnetic cores via powder metallurgy. Technology development and implementation", PN-III-P2-2.1-BG-2016-0365, (2016-2018), http://www.sim.utcluj.ro/contracte/PN-III-P2-2.1-BG-2016-0365/
New technology of iron content reduction from quartz sands by magnetic separation, PN-III-P2-2.1-BG-2016-0214, (2016-2018) http://www.sim.utcluj.ro/contracte/PN-III-P2-2.1-BG-2016-0214/
"Researches on synthesis of spark plasma sintered nanocomposite compacts of Permalloy/Fe-Si type using mechanically alloyed powders", Bilateral cooperation project: France-Romania, (2013-2014)
"Soft magnetic nanocrystalline/nanostructured powders and compacts obtained by mechanosynthesis and spark plasma sintering", PNII-ID-PCE, (2012)
"Amorphous soft magnetic Fe-based and Co-based powders and cores prepared by mechanical alloying and spark plasma sintering", PNII-RU-TE, (2012)
"Spark plasma sintered soft magnetic composite/nanocomposite compacts of iron alloy/iron mixed ferrite type", PNII-RU-TE, (2012)
"Powders and soft magnetic materials nanocomposites of ferrite/transition metal (MeFe2O4/(Fe, Ni, Fe-Ni-X) type exchange coupled, obtained by mechanical alloying", PNII-ID-PCE - ID, (2008)

Significant results

The most representative publications of the past 5 years (2016-2020):

1 B.V. Neamţu, A. Belea, F. Popa et al., Properties of soft magnetic composites based on Fe fibres coated with SiO_2 by hydrothermal method, *Journal of Alloys and Compounds*, vol. 826 (2020) in press, *Q1 ranked*

2 B.V. Neamţu, A. Opriş, P. Pszola, F. Popa, T.F. Marinca, N. Vlad, I. Chicinaş, Preparation and characterization of soft magnetic composites based on Fe fibres, J. *Materials Science* 55 (2020) 1414–1424, February 2020, *Q2 ranked.*
3 C. D. Stanciu, J.B. Marimon da Cunha, I. Chicinaş, O. Isnard, Structural, magnetic and Mössbauer spectroscopy characterisation of the Fe-15 wt. %Si nanocrystalline powder obtained by mechanical alloying and annealing, *Journal of Alloys and Compounds*, 797 (2019) 865-873, *Q1 ranked*
4 C.V. Pricã, T.F. Marinca, B.V. Neamţu, F. Popa et al., Structural and thermal investigation of Ta-25 % wt. Cu alloy prepared by mechanosynthesis route, Journal of Thermal Analysis and Calorimetry 136 (2019) 995–1001, *Q2 ranked*
5 N. Maat, R. Larde, V. Nachbaur, J.M. Le Breton, O. Isnard, V. Pop, I. Chicinaş, Investigation by Mossbauer spectroscopy and atom probe tomography of the phase transformation of Nd-Fe-B alloys after high-energy ball milling, *Journal of Applied Physics*, 124 (2018) Issue: 22, Article Number: 223905, *Q2 ranked*
6 H.F. Chicinaş, T.F. Marinca, B.V. Neamţu et al., Influence of process control agent type on the mechanosynthesis of Fe_3O_4 particles, *Advanced Powder Technology* 29 (2018) 1838-1847 Published: AUG 2018, *Q2 ranked*
7 C.V. Prica, B.V. Neamţu, F. Popa et al., Invar-type nanocrystalline compacts obtained by spark plasma sintering from mechanically alloyed powders, *Journal of Materials Science* 53 (2018) 3735-3743 *Q2 ranked*
8 Neamţu, B. V.; Năsui, M.; Marinca, T. F.; et al., Soft magnetic composites based on hybrid coated Fe-Si nanocrystalline powders, *Surface & Coatings Technology* 330 (2017) 219-227 Published: DEC 1 2017, *Q1 ranked*
9 C. D. Stanciu, T.F. Marinca, I. Chicinaş, O. Isnard, Characterisation of the Fe-10 wt. % Si nanocrystalline powder obtained by mechanical alloying and annealing, *J. Magnetism and Magnetic Mater.* 441 (2017) 455-464, *Q2 ranked*
10 T.F. Marinca, H. F. Chicinaş, B. V. Neamţu, I. Chicinaş, O. Isnard, F. Popa, et al., "Nanocrystalline/nanosized Fe3O4 obtained by a combined route ceramic-mechanical milling. Effect of milling on the chemical composition, formation of phases and powder characteristics", *Advanced Powder Technology*, 27 (2016) 1588-1596, Jul 2016, *Q2 ranked*
11 T. F. Marinca, H. F. Chicinaş, B. V. Neamţu, O. Isnard et al., "Mechanosynthesis, structural, thermal and magnetic characteristics of oleic acid coated Fe3O4 nanoparticles", *Materials Chemistry and Physics*, 171 (2016) 336-345, Mar 2016, *Q2 ranked*
12 T. F. Marinca, I. Chicinaş, O. Isnard, and B. V. Neamţu, "Nanocrystalline/nanosized manganese substituted nickel ferrites - Ni1-xMnxFe2O4 obtained by ceramic-mechanical milling route", *Ceramics International*, 42 (2016) 4754-4763, Mar 2016, *Q1 ranked*
13 B. V. Neamţu, H. F. Chicinaş, T. F. Marinca, O. Isnard, and I. Chicinaş, "Preparation and characterisation of Co-Fe-Ni-M-Si-B (M = Zr, Ti) amorphous powders by wet mechanical alloying", *Journal of Alloys and Compounds*, 673 (2016) 80-85, Jul 2016, *Q1 ranked*
14 B. V. Neamţu, H. F. Chicinaş, T. F. Marinca, O. Isnard, I. Chicinaş, and F. Popa, "Synthesis of amorphous Fe75Si20-xMxB5 (M = Ti, Ta, Zr) via wet mechanical alloying and its structural, thermal and magnetic characterisation", *Advanced Powder Technology*, 27 (2016) 461-470, Mar 2016, *Q2 ranked*
15 B. V. Neamţu, H. F. Chicinaş, T. F. Marinca et al, "Amorphisation of Fe-based alloy via wet mechanical alloying assisted by PCA decomposition", *Materials Chemistry and Physics*, 183 (2016) 83-92, Nov 2016, *Q2 ranked*

Significant solutions: Synthesis routes for obtaining nanocrystalline/nanosized, composite/nanocomposite and amorphous magnetic materials
Nanocrystalline/nanosized, composite, nanocomposite and amorphous powder compaction.

Products and technologies (Designed and developed of home-made spark plasma sintering equipment):

1. The group obtained nanocrystalline magnetic powders of Ni_3Fe, Supermalloy (NiFeMo, NiFeCuMo) and developed 2 mechanical alloying method (mechanical alloying combined with annealing, MA with germ of product insertion)
2. Nanocomposite magnetic powders of spring-magnet type ($SmCo_5$/α-Fe, $SmCo_2Cu_3$/α-Fe, $Nd_2Fe_{14}B$/α-Fe, $(Pr,Dy)_2Fe_{14}B$/α-Fe) obtained by mechanical milling
3. Soft magnetic nanocomposite materials, from nanocrystalline powders obtained by mechanical alloying
4. Soft nanocrystalline ferrites obtained by mechanical alloying
5. Nanocomposite powder of soft ferrite/alloy type ($ZnFe_2O_4$/Fe or Ni, $NiFe_2O_4$/Fe etc) and nanocomposite compacts

Patents/patents pending:

1. P. Cârlan, I. Chicinaş, *Process for preparing the powder of IrAl and $IrAl_3$ intermetallic compounds and irradiation target for industrial gammagraphy obtained there with, Patent Number(s): RO123425-B1*
2. I. Chicinaş, T.F. Marinca, F. Popa, B.V. Neamţu, Process to obtain the n*anostructured powder of permalloy (supermalloy) Rhometal type, Patent Number(s): RO130354-A0; RO130354-B1*.
3. I. Chicinaş, T.F. Marinca, F. Popa, B.V. Neamţu, *Pulberi compozite de tipul Fe sau aliaj feromagnetic/ferită magnetic moale cu structură pseudo „core-shell" și procedeu de obținere*, OSIM-Nr. A10083/18.12.2015, patent pending.

The offer addressed to the economic environment

Research & development	Preparation of nanocomposite/nanocrystalline/nanosized magnetic powders and composite/ nanocomposite compacts. Structural, morphological and magnetic characterisation of powders and compacts. Study of exchange coupling in nanocomposites. Researches on the development of magnetic materials for medium and high frequencies. Production of the bonded magnets, production of the nanocrystalline and nanostructured powders by mechanical alloying/milling and reactive milling, production of magnetic cores (sintered and composite), specific measurements, structural analysis, SEM and EDX analysis.
Consulting	Soft and hard magnetic materials, magnetic hysteresis measurement in DC & AC (up to 10 kHz) for permanent magnets & magnetic cores, mechanosynthesis, reactive milling, X-ray diffraction, SEM+EDX
Training	Lectures in: magnetic materials, mechanosynthesis, XRD, SEM, EDX, DSC-TG. Coordination for PhD projects related to elaboration of magnetic powders produced by mechanical alloying, bonded magnets, sintered soft&hard composites&nanocomposite magnetic materials.

RESEARCH CENTRE FOR ENVIRONMENTAL ENGINEERING

Contact details

Name	**Research Centre For Environmental Engineering**
Acronym	**IngMed**
Logo	
Site	www.imadd.utcluj.ro
Address	103 – 105, Muncii Blvd., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials and Environmental Engineering** **Environmental Engineering and Sustainable Development Entrepreneurship Department**
Telephone	+40 264 401624
Fax	+40 264 415054
Director	Assoc. Prof. Dr. Eng. Viorel Dan
e-mail	Dan.Viorel@imadd.utcluj.ro

Areas of expertise

clean technologies, waste recovery, recycling materials, ecological reconstruction, sustainable development, new materials, sustainable energy, structural modelling, risk assessment, impact studies, monitoring systems

Team

Assoc. Prof. Dr. Eng. Viorel Dan, Prof. Dr. Eng. Tiberiu Rusu, Prof. Dr. Eng. Valer Micle, Assoc. Prof. Dr. Eng. Ovidiu Nemeş, Assoc. Prof. Dr. Eng. Emil Riţi-Mihoc, Assist. Prof. Dr. Eng. Marius Crişan, Assist. Prof. Dr. Eng. Dan Porcar, Assist. Prof. Dr. Eng. Ioana Deneş-Pop, Assist. Prof. Dr. Eng. Cristina Horju-Deac, Assist. Prof. Dr. Eng.Simona Avram, Assist. Prof. Dr. Eng. Timea Gabor, Assist. Prof. Dr. Eng. Bianca Soporan, Assist. Prof. Dr. Eng. Andrei Rusu, Assist. Prof. Dr. Eng. Ancuţa Tiuc

Representative projects

"Tehnologie inovativă de bioremediere ex-situ a solurilor poluate cu hidrocarburi, PN-II-PT-PCCA-2013-4-1717, 2014-2017
"Stabilirea corelației între conductivitatea băii și cantitatea de fosfați acumulată la lubrifiere", C.I.1.1.T.2, 2016.
"Design of an Equipment to recycle used PET bottles", Industry Research Project, (2014)
"Network of Excellence HighTech Europe", (2009-2013)
"Biomedical application of metal compounds – Metallomics", PCCE, (2010-2013)
"Center for Molecular Modeling and Quantic Computational Chemistry", Capacities Project, (2007-2009)
"Innovative technology for contaminated soils remediation by metallurgical specific activities", PNCDI II, (2008-2011)
"Regeneration system for recycling organic waste chemically bonded moulding sand in the foundry industry", CEEX, (2006-2008)
"Technologies for metals and plastics recovery from waste and telecommunications equipment", CEEX, (2005-2007)
"Advanced optimization methods of bonded joints in metal, composite and mixed materials", PNII-ID, (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. Ancuţa Elena Tiuc, Ovidiu Nemeş, Horatiu Vermesan, Adina Cristina Toma, New sound absorbent composite materials based on sawdust and polyurethane foam, Composites Part B: Engineering, Volume 165, 15 May 2019, Pages 120-130.
2. Ancuţa Elena Tiuc, Ovidiu Nemeş, Horatiu Vermesan, Roxana Tamas-Gavrea, Ovidiu Vasile, New sound absorbing materials obtained from waste rigid polyurethane foam, Materiale Plastice, vol.56, No.4, 2019.
3. Olteanu, M., Septelean, R., Nemes, O., Deak, G., Baraitaru, A. Functionalization of mesoporous silica materials using Calix[4]arenes, Materiale Plastice, 56(3), pp. 554-558, 2019

4. Bere, Paul; Dudescu, Mircea; Neamtu, Calin; Nemes Ovidiu et al., Fabrication and Mechanical Characterization of Short Fiber-Glass Epoxy Composites MATERIALS PERFORMANCE AND CHARACTERIZATION Volume: 8 Issue: 1, Pages: 163-174 Published: 2019
5. Plugaru, Sebastian Cristian Radu; Dan, Viorel; Mentiu, Xenia Paula, USE OF GREEN ALGAE TO REDUCE HEAVY METALS FROM INDUSTRIALLY POLLUTED WATERS SCIENTIFIC PAPERS-SERIES E-LAND RECLAMATION EARTH OBSERVATION & SURVEYING ENVIRONMENTAL ENGINEERING Volume: 7 Pages: 136-139 Published: 2018
6. Lakatos, Elena Simina; Cioca, Lucian-Ionel; Dan, Viorel; et al., Studies and Investigation about the Attitude towards Sustainable Production, Consumption and Waste Generation in Line with Circular Economy in Romania SUSTAINABILITY Volume: 10 Issue: 3 Article Number: UNSP 865 Published: MAR 2018
7. Tiuc, Ancuta Elena; Vasile, Ovidiu; Vermesan, Horatiu; et al., New Multilayered Composite for Sound Absorbing Applications ROMANIAN JOURNAL OF ACOUSTICS AND VIBRATION Volume: 15 Issue: 2 Pages: 115-121 Published: 2018
8. Gabor, Timea; Dan, Viorel; Badila, Iulian-Nicolae; et al., IMPROVING THE ENERGY EFFICIENCY OF RESIDENTIAL BUILDINGS BY USING A DRAIN WATER HEAT RECOVERY SYSTEM ENVIRONMENTAL ENGINEERING AND MANAGEMENT JOURNAL Volume: 16 Issue: 7 Pages: 1631-1636 Published: JUL 2017
9. G. E. Popita, C. Rosu, D. Manciula, O. Corbu, A. Popovici, O. Nemes, et al., "Industrial Tanned Leather Waste Embedded in Modern Composite Materials", *Materiale Plastice*, vol. 53, pp. 308-311, Jun 2016.
10. A. E. Tiuc, V. Dan, H. Vermesan, T. Gabor, and M. Proorocu, "Recovery of Sawdust and Recycled Rubber Granules as Sound Absorbing Materials", *Environmental Engineering and Management Journal*, vol. 15, pp. 1093-1101, May 2016.
11. T. Gabor, V. Dan, A. E. Tiuc, I. M. Sur, and I. N. Badila, "Modelling And Simulation of Heat Transfer Processes for Heat Exchangers Used in Wastewater Treatment", *Environmental Engineering and Management Journal*, vol. 15, pp. 1027-1033, May 2016.
12. G. C. Rogozan, V. Micle, and I. M. Sur, "Maps of Heavy Metals in Cluj County Soils Developed using the Regression-Kriging Method", *Environmental Engineering and Management Journal*, vol. 15, pp. 1035-1039, May 2016.
13. I. Smical, A. Muntean, and V. Micle, "Influence of Some Natural Organic Additives on the Quality of Vegetal Compost", *Environmental Engineering and Management Journal*, vol. 15, pp. 1041-1048, May 2016.
14. Tiuc A.E., Vermeşan H., Gabor T., Vasile O., "Improved sound absorption properties of polyurethane foam mixed with textile waste", *Energy Procedia*, Volume 85, January 2016, Pages 559–565, EENVIRO-YRC 2015 - Bucharest doi:10.1016/j.egypro.2015.12.245
15. A.E. Tiuc, O. Nemeş, I. Perhaiţa, H. Vermeşan, T. Gabor, V. Dan, "Thermal behaviour of polyurethane matrix composite materials", *Studia Universitatis Babes-Bolyai Chemia* Issue 2, pp. 169-176, 2015
16. M.B. Soporan, O. Nemeş, "Quantitative analysis of the noncompliant landfill constituents", *Studia Universitatis Babes-Bolyai Chemia* Issue 2, pp. 201-206, 2015
17. S.-A. Radu, V.D. Leordean, N. Bâlc, O. Nemeş, "Resin type influence on moulded parts final dimensions", *Studia Universitatis Babes-Bolyai Chemia* Issue 2, pp. 219-228, 2015
18. J.D. Chelaru, L.M. Muresan, V.F. Soporan, O. Nemes, L. Barbu-Tudoran, "Investigation of a naturally patinated bronze artifact originating from the outdoor statuary group of Mathias Rex", *Journal of Cultural Heritage* Volume: 15, Issue: 5, 2014, pp: 546-549

Significant solutions:

New technologies for waste recycling; New technologies for soil remediation; New and improved solution for water treatment

Products and technologies:

1. New materials from multi-layer packages, wood saw dust and vegetal wastes
2. New technologies for soil remediation
3. New technologies for water treatment

Patents:

1. PROCESS AND DEVICE FOR MAKING PLATES OF POLYMERIC COMPOSITE MATERIALS REINFORCED WITH FIBERS, Patent Number(s): RO128093-A0 ; RO128093-B1 ; RO128093-A8, **INVENTOR(S)**: BERE P, BERCE P, NEMES O, BALC N, BERE P P, 2015.

2. SOUNDPROOFING COMPOSITE MATERIAL COMPRISES FIR SAWDUST GRAINS AND POLYURETHANE FOAM, Patent Number(s): RO129228-A0 ; RO129228-B1 ; RO129228-A8, 2015, Authors: Ancuţa Tiuc, Tiberiu Rusu, Ovidiu Nemeş

The offer addressed to the economic environment

Research & development	Research in development of new methods and technologies of soil remediation Research and development of new methods and technologies of water treatment Research in environmental risk assessments Research in waste recycling and new materials manufacturing
Consulting	Consulting in soil remediation Consulting in water treatment technologies Consulting in waste management and recycling technologies Consulting in risk assessments
Training	Training courses in waste management; Training courses in recycling technologies Training courses in soil remediation technologies;Training courses in water treatment

CORROSION AND ANTICORROSION PROTECTION CENTER

Contact details

Name	**Corrosion and Anticorrosion Protection Centre**
Acronym	**CAPC**
Logo	
Site	https://coroziune.utcluj.ro/en/labCPA-en/Welcome.html
Address	103-105 Muncii Av., room G09C 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials and Environmental Engineering** **Environmental Engineering Department**
Telephone	+40 264 401696
Fax	+40 264 415 054
Director	Prof. Dr. Hab. Eng. Horatiu Vermesan
e-mail	Horatiu.Vermesan@imadd.utcluj.ro

Areas of expertise

Surface Engineering technologies for corrosion protection. Layers that alter the structure and / or chemical composition and deposition of anticorrosion coatings.
Analysis and characterization of surface layers. Characterization of deposit thickness, adhesion, degree of gloss, mechanical properties, tribological properties.
Evaluation of corrosion resistance in artificial atmosphere according to ISO 9227, ISO 10289 and ASTM B117. Electrochemical methods for the characterization of corrosion through accelerated corrosion tests. Cyclic voltammetry, polarization resistance, impedance spectroscopy

Team

Prof. Dr. Eng. Horațiu VERMEȘAN, Assoc. Prof. Dr. Eng. Gavril NEGREA, Assoc Prof. Ancuta TIUC
PhD student: Andreea PLEȘA, PhD student: Denisa CUIBUS

Representative projects

TheTRADE-IT: Innovative Technologies For Advanced Materials Recovery from IT and Telecommunication Waste PN-III-P1-1.2-PCCDI-2017-0652, project NR. 84PCCDI - 01/03/2018 TRADE-IT.
Establishing the correlation between bath conductivity and the amount of phosphates accumulated at lubrication, project code C.I.1.1.T.2, 2016, financed by TUCN
ZINITECH: "**Innovative technology for production of zinc-nickel alloy layers with anticorrosive properties by co-deposition of composite nano-particles**", INNOVATION Project 261/20.10.2008
"Thermal shock behaviour of functional gradient layers deposit on austenitic stainless steels", Grant 944/2005;
"Obtaining, characterization and modelling of thin layers with specific properties" Contract 33385 tema A67, code CNCSIS 404
"Theoretical and experimental research concerning the tribo-corrosion of diffusion layers obtained by surface engineering technologies", 66-1353-2001.
"The amelioration of wear and corrosion resistance by plastic deformation and plasma nitriding surface hardening" Project 7067-B4.
"Research concerning the influence of oxygen on the structure and properties of nitrided and nitrocarburized layers" Project AT, 3/225 2001
"Nano-crystalline electro-deposits - their processing, character and properties"
EC Research Project, NEPCAP, Contract No G1ST-CT-2002-50211;

Significant results

The most representative publications of the past 5 years:

1. Uriciuc, W.A.; Vermesan, H.; Tiuc, A.E.; Ilea, A.; Bosca, A.B.; Popa, C.O., Casting over Metal Method Used in Manufacturing Hybrid Cobalt-Chromium Dental Prosthetic Frameworks Assembles, MATERIALS, Volume: 14, Issue: 3, 539, DOI:10.3390/ma14030539, Published: 2021, WOS: 000615381900001;
2. Neamtu, BV; Pszola, M ; Vermesan, H ; Stoian, G; Grigoras, M; Oprisa, A ; Cotojman, L ; Marinca, TF; Lupu, N ; Chicinas, I, Preparation and characterisation of Fe/Fe3O4 fibres based soft magnetic composites, CERAMICS INTERNATIONAL Volume: 47 Issue: 1 Pages: 581-589 DOI: 10.1016/j.ceramint.2020.08.165 Published: 2021, WOS:000589639400002
3. Vermeșan H., Mangau, A., Tiuc A.-E. Perspectives of Circular Economy in Romanian Space, SUSTAINABILITY, Volume: 12, Issue: 1, Article Number: 74, DOI: 10.3390/su12176819, Published: 2020, WOS:000569589800001
4. Mihaila, L; Unguresan, M., Rada, M.; Popa, A.; Macavei, S., Vermesan, H.; Rada, S., Perspectives in the Recycling of High Sulphatized Electrodes from Lead Acid Batteries, ANALYTICAL LETTERS, AUG 2020 DOI: 10.1080/00032719.2020.1803349, Published: 2020, WOS:000556481700001
5. Borlea S. I., Tiuc A. E., Nemeş O., Vermeşan H., Vasile O., Innovative Use of Sheep Wool for Obtaining Materials with Improved Sound-Absorbing Properties, Materials 2020, 13(3), 694. Published: FEB 2020.
6. Vermeșan H., Tiuc A. E., Purcar M., Advanced Recovery Techniques for Waste Materials from IT and Telecommunication Equipment Printed Circuit Boards, Sustainability 2020, 12(1), Published: IAN 2020.
7. Tiuc, Ancuta Elena; Vasile, Ovidiu; Vermesan, Horatiu; et al., Sound Absorbing Insulating Composites Based on Polyurethane Foam and Waste Materials, MATERIALE PLASTICE Volume: 55 Issue: 3 Pages: 419-422 Published: SEP 2018
8. Rada, S.; Cuibus, D.; Vermesan, H.; et al., Structural and electrochemical properties of recycled active electrodes from spent lead acid battery and modified with different manganese dioxide contents ELECTROCHIMICA ACTA Volume: 268 Pages: 332-339 Published: APR 1 2018
9. Tiuc, Ancuta Elena; Vasile, Ovidiu; Vermesan, Horatiu; et al., The Use of Mathematical Models in Determining Acoustic Absorption Coefficient of New Composite Porous Materials ROMANIAN JOURNAL OF ACOUSTICS AND VIBRATION Volume: 14 Issue: 2 Pages: 97-101 Published: 2017
10. A. E. Tiuc, V. Dan, H. Vermesan, T. Gabor, and M. Proorocu, "Recovery of Sawdust and Recycled Rubber Granules as Sound Absorbing Materials", *Environmental Engineering and Management Journal*, vol. 15, pp. 1093-1101, May 2016.
11. S. Rada, M. L. Unguresan, L. Bolundut, M. Rada, H. Vermesan, M. Pica, et al., "Structural and electrochemical investigations of the electrodes obtained by recycling of lead acid batteries", *Journal of Electroanalytical Chemistry*, vol. 780, pp. 187-196, Nov 2016.
12. Vasile Rus, Horaţiu Vermeşan , Andreea Hegyi, Ancuţa Elena Tiuc, “Electrochemical Impedance Spectroscopy Study - Evolution Modeling of Corrosion Products Layer Formed at Hot Dip Galvanized Rebar–Fresh Concrete Interface”, *Revista Română de Materiale / Romanian Journal of Materials* 2016, 46 (2), 196 – 203
13. Tiuc A.E., Vermeşan H., Gabor T., Vasile O., “Improved sound absorption properties of polyurethane foam mixed with textile waste”, *Energy Procedia*, Volume 85, January 2016, Pages 559–565, EENVIRO-YRC 2015 - Bucharest doi:10.1016/j.egypro.2015.12.245.

Significant solutions:

Estimation of corrosive action of different natural atmospheric environments. Anticorrosive protection of materials in different aggressive climatic conditions: urban, industry, marine, mining etc. Testing of galvanic (contact) corrosion of different metals. Accelerated corrosion testing of protective paint coatings. Investigation of the micro-structural properties of protective coatings: thickness, impact tests, adherence (cross-cut and pull off methods), drawability, elasticity, relative hardness and abrasion. Improving corrosion resistance of hot-dip galvanized coatings. Choice of paints for effective protection of galvanized steel structures;

Products and technologies:

1. Technology for obtaining anti-corrosion layers by composite nano-particles codeposition
2. Technology for obtaining of zinc-nickel alloy layers with anticorrosive properties by co-deposition of composite nano-particles
3. Surface engineering technologies for improving wear resistance of austenitic stainless steels.
4. Nano-crystalline electro-deposits with high anticorrosion properties.
5. Diffusion layers obtained by surface engineering technologies for tribocorrosion applications.

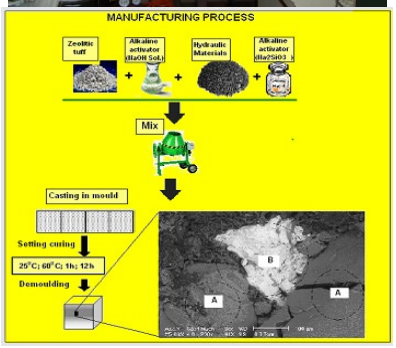
The offer addressed to the economic environment

Research & development	Development of original solutions for protection against corrosion in various environments Security of social infrastructure and security of long service life coated steel sheet Study the fundamental characteristics of corrosion behaviour and utilise this knowledge to develop new technologies and processes to help solve challenging problems and issues. Partner with industry and continue to foster relationships to tackle pressing corrosion and surface related demands affecting our society.
Consulting	Choosing the Surface Engineering technologies for corrosion protection purposes. Research on corrosion behaviour of metallic deposits. Study of new layers with anticorrosive properties.
Training	Training courses for engineers in the field of corrosion and corrosion protection. The best available techniques in corrosion protection technologies. Training courses in electrochemical deposition of metals and alloys.

MATERIALS SCIENCE AND ENGINEERING RESEARCH CENTER

Contact details

Name	**Materials Science and Engineering Research Center**
Acronym	**MSERC**
Logo	
Site	http://research.utcluj.ro/index.php/domenii-de-cercetare.html http://research.utcluj.ro/tl_files/research/Research%20Domain/Ingineria%20Materialelor/4_Hotea.pdf
Address	62A. Victor Babes Str., 430083, Baia Mare, Romania
Faculty Department	**Engineering** **Mineral Resources, Materials and Environmental Engineering**
Telephone	+40 362407266
Fax	+40 262 276153
Director	Prof. Dr. Eng. Vasile Hotea
e-mail	vasilehotea50@yahoo.com



Areas of expertise

Nonferrous Alloys ,
-Casting of nonferrous alloys, metallic powders, Characterization mixtures, heat treatment
Heat and Cold Deformation
Attempts heat and cold deformation by traction and compression for aluminum alloys, extrusion, forging
Surface Engineering
Thin film layers, electroplating, anodizing, corrosion and anticorrosive protection
Analysis Techniques
Determination of physical, chemical and mechanical properties of materials, metallographic analysis of materials (optical microscopy), X-Ray diffraction, SEM
Environmental protection
Environmental protection of industry, Risk assessment

Team

Prof. Dr. Eng. Vasile Hotea, Assoc. Prof. Dr. Eng. Elena Pop, Lecturer. Dr. Eng. Gheorghe Iepure, Lecturer Dr. Eng. Jozsef Juhasz, Lecturer Dr. Eng. Aurica Pop, Lecturer. Dr. Eng. Brezoczki Valeria, Sing. Loredana Hutira

Representative projects

"Energy Recovery from Municipal Solid Waste by Thermal Conversion Technologies in Cross-border Region", Project Manager: Juhasz Jozsef; Brezoczki Valeria, Parteneri: Technical University of Kosice (Slovak Republic), University of Miskolc (Hungary), **Technical University of Cluj-Napoca, North University Center of Baia Mare** (2019-2020), **(Romania)** https://huskroua-cbc.eu/about/programme-description
"**Preventing and removing environmental impacts using geosynthetic materials"**, Grant CNCSIS, (2007-2009) Romanian Authority for Scientific Research (Joint Applied Research Project), http://frmm.ubm.ro/index_rom.htm
LEXIN, **"Applied research on green heating technology and biogenetic type LEXIN"**, LEXIN Group (AGDE RUITER BEHEER BV, LEXIN HOLDING BV, LEXIN International B.V.), LEXIN Produktion GMBH, http://frmm.ubm.ro/index_rom.htm (2008-2009)

Significant results

The most representative publications of the past 5 years:

1. **V. Hotea, J. Jozsef,** Analysis of the extrusion process parameters of high-strength aluminum alloys used in the aerospace industry, International Conference of the Carpathian Euro-Region Specialists in

Industrial Systems, CEurSIS 2019, IOP Conference Series: Materials Science and Engineering, Paper ID006_CEURSIS-in press
2. Damian, Gheorghe; Andras, Peter; Damian, Floarea; **Iepure G** et al., The role of organo-zeolitic material in supporting phytoremediation of a copper mining waste dump INTERNATIONAL JOURNAL OF PHYTOREMEDIATION Volume: 20 Issue: 13 Pages: 1307-1316 Published: NOV 10 2018
3. Damian, Gheorghe; Lanzerstorfer, Christof; Damian, Floarea; **Iepure G** et al., Distribution of Heavy Metals and Minerals in the Various Size Fractions of Soil from CopE (TM) a Mic, RomAnia WATER AIR AND SOIL POLLUTION Volume: 229 Issue: 6 Article Number: 202 Published: JUN 2018
4. **Hotea, V.; Juhasz,** J.; Cadar, F. , Grain refinement of 7075Al alloy microstructures by inoculation with Al-Ti-B master alloy INNOVATIVE IDEAS IN SCIENCE 2016, Book Series: IOP Conference Series-Materials Science and Engineering, Volume: 200, Article Number: UNSP 012029 Published: 2017
5. **Pop, A.; Iepure, G.**, Research and development regarding the retaining mechanism of lead ions in industrial wastewaters using natural matter with remarkable properties Conference on Innovative Ideas in Science Location: Baia Mare, ROMANIA Date: NOV 10-11, 2016 Book Series: IOP Conference Series-Materials Science and Engineering Volume: 200 Article Number: UNSP 012068 Published: 2017
6. M. M. Chicos, Gh. Damian, D. Stumbea, N. Buzgar, T. Ungureanu, V. Nica, **Gh. Iepure**, „Mineralogy and geochemistry of the tailings pond from straja valley (Suceava county, Romania). factors affecting the mobility of the elements on the surface of the waste deposit", *Carpathian Journal of Earth and Environmental Sciences*, Vol.1, No.1, 2016, pp. 265-280
7. Chicos, Marian Marius; Damian, Gheorghe; Stumbea, Dan; **Iepure Gh** et al., Mineralogy and geochemistry of the tailings pond from Straja Valley (Suceava County, Romania). factors affecting the mobility of the elements on the surface of the waste deposit carpathian journal of earth and environmental sciences Volume: 11 Issue: 1 Pages: 265-280 Published: FEB 2016
8. **V. Hotea**, „Clean Technology of Lead Recovery from Spent Lead Paste", in *Recent Researches in Applied Economics and Management, Economic Aspects of Environment*, vol. 2, august 27-29, 2013, pp. 263-270
9. **J. Juhasz**, „Modern Systems for Processing of Brasses and Bronzes with Gas Filtration", in *Recent Researches in Applied Economics and Management, Economic Aspects of Environment*, vol. 2, august 27-29, 2013, pp. 259-263
10. **Pop, A**. I. Vida-Simiti, G. Damian, **G. Iepure,** "Removal of Heavy Metals from Wastewaters by Using Zeolitic Tuff", in *Carpathian Journal of Earth and Environmental Sciences*, vol. 7, no. 1, 2012, pp.239-248

Patents

V. Hotea, G. Badescu, **J. Juhasz**, Procedeu de reţinere prin absorbţie chimică a dioxidului de carbon din gazele reziduale, Patent No. RO 127080/30.03.2016

V. Hotea, The plant for Capture of Sulfur Dioxide and Carbon Dioxide in the Flue Gases, Patent No. RO 125756 B1 29.11.2012

J. Jozsef, Process of obtaining from the concentrates of cupric oxide pellets, Patent No. RO125453B1, 2010

V. Hotea, Installation of a Continuously Supply of Cold Materials Processed Through Melting, Patent No. RO 122230/27.02.2009

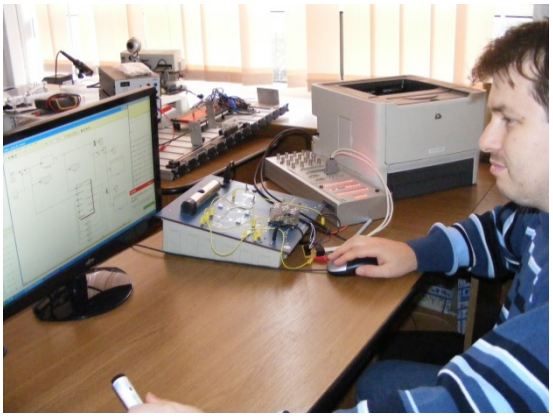
The offer addressed to the economic environment

Research & development	Initiative in attracting funds pre-competitive research projects in public-private partnership initiated, especially those that involve collaboration with our university. The objective of these projects is to create new products and technologies with potential commercial exploitation. Focus of research efforts of our team to clearly identified problems to businesses through involvement in research and development projects representatives demand, especially that coming from regional multinational companies (Universal Alloy Corporation-USA) in the field of Materials Engineering, and national public authorities.
Consulting	Attracting customers (public and private agencies) with little experience in Materials Engineering to acquisition technologies underlying our research excellence for the the correct choice of materials, electrochemical coating technologies, fault analysis, development ferrous alloys, environmental protection industry.
Applied engineering services	Analysis and characterization of metallic materials, metallographic analysis, mechanical characterization, thermal shock, mechanical and corrosive behavior.
Training	Applications on courses, informal training type, indirect training, community integration, knowledge management in the field of Engineering Materials practical activities training.

MECHATRONICS AND ENERGY LABORATORY

Contact details

Name	**Mechatronics and Energy Laboratory**
Acronym	**LME**
Logo	L E M Laboratorul de Mecatronică şi Energie
Site	https://mdm.utcluj.ro/wp-content/uploads/2017/02/Laborator-de-Cercetare-ME.pdf
Address	103-105 Muncii Str., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automotive, Mechatronics and Mechanical Engineering** **Mechatronics and Machine Dynamics Department**
Telephone	+40 264 401756
Fax	+40 264 415 490
Director	Prof. Dr. Eng. Radu Bălan
e-mail	radubalan@yahoo.com Radu.Balan@mmfm.utcluj.ro



Areas of expertise

Materials, processes and innovative products: Mechatronic systems, advanced industrial process control technologies, high precision mechanical products and technologies, advanced materials, innovative technologies for transportation. **Key words**: mechatronics, intelligent actuators, sensorial systems, advanced control, robotic systems;
Computer science technologies: Technologies for achieving high performance computing applications, opened, heterogeneous, scalable, fault tolerant and with a good connectivity between user and resources, artificial intelligence methods and systems**. Key words**: control algorithms, artificial intelligence, rapid control prototyping, human-machine interface systems**.**
Energy: Concepts, technologies and products that contribute to satisfy the energy needs at the lowest price, use of new energetic sources and improving the decisional process, increase of the technological competence and promotion of the knowledge transfer and technologies in energetic fields. **Key words:** energy efficiency, energy saving, renewable energy, control, sustainability, environment.

Team

Prof. Dr. Eng. Radu Bălan, Prof. Dr. Eng. Vistrian Mătieş, Prof. Dr. Eng. Victor Hodor, Assoc.Prof. Dr. Eng. Olimpiu Hancu, Assoc.Prof Dr. Eng. Ciprian Lăpuşan, Lecturer Dr. Eng. Sorin Besoiu, Lecturer Dr. Eng. Radu Donca, Lecturer. Dr. Eng. Alin Pleşa

Representative projects

MoniCult – "Design, manufacturing and testing of a mechatronic system for multispectral surveillance of crops vegetation status" PN-II-PT-PCCA-2013-4-1629, (2014-2017)
"Design of a mobile multifunctional platform for inner water pipe inspection", (2012)
DEHEMS, **"Digital Environment Home Energy Management System"**, Europen FP7 project, https://cordis.europa.eu/project/id/224609 (2008-2011)
FlexForm, **"Flexible professional forming program on mechatronic platforms"**, POSDRU, http://www.flexform.ro/
EQUATOR, **"Advanced strategies for high performance indoor Environmental Quality in Operating Rooms"**, PN-II-PT-PCCA, (2011)
"Research regarding advanced control in mechatronic applications", PNII-Idei (2007-2010)
"Simulation, Control and Testing Platform with Applications in Mechatronics", CEEX, (2006-2008)
"Numerical analysis and control of the combustion instability using acoustic analogy", IDEI,2007-2010

E-FARM, **"Informatics support system for design, implementation and control for hybrid energy farms"**, http://www.automation.ro/e-farm/index.html (2008)
AMFM," Implementing the shape memory effect in mechatronic systems using advanced materials obtained by powder metallurgy", 2008-2011
MMFEH, **"Design of an innovative hydro-pneumatic system by implementing the shape memory alloy effect using powder metallurgy technology"**, (2008)

Significant results

The most representative publications of the past 5 years:

1. Diudea H., Baldogi T., Balan R., A comparative analysis of model-based control methods applied for the active suspension system, IEEE 2021 9th International Conference on Modern Power Systems (MPS)
2. Baldogi T., Diudea H., Balan R., Improving the vibration reliability testing process, IEEE 2021 9th International Conference on Modern Power Systems (MPS)
3. Brai L., Bolchiş M., Blidar O., Balan R., Munteanu R., Active Filtering in Beamforming Circuit: Design, Calculation and Simulation. 2021 16th IEEE International Conference on Engineering of Modern Electric Systems (EMES).
4. Sandru,Vasile, Balan, Radu, A model-based approach to develop a mechatronic system, 2020 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR)
5. Macavei, Sergiu; Rada, Marius; Zagrai, Mioara;Balan, Radu et al., Spectroscopic Characterization of a Lead-Lead Dioxide Automobile Battery ANALYTICAL LETTERS Volume: 51 Issue: 17 Pages: 2671-2681 Published: 2018
6. Macavei, Sergiu; Toloman, Dana; Stefan, Maria; Balan Radu et al., Characterization of Cu2ZnSnS4 Thin Film Deposited by Pulse Laser Deposition 11TH INTERNATIONAL CONFERENCE OF PROCESSES IN ISOTOPES AND MOLECULES (PIM 2017) Book Series: AIP Conference Proceedings Volume: 1917 Article Number: UNSP 040010 Published: 2017
7. Rad, Ciprian-Radu; Hancu, Olimpiu, An improved nonlinear modelling and identification methodology of a servo-pneumatic actuating system with complex internal design for high-accuracy motion control applications SIMULATION MODELLING PRACTICE AND THEORY Volume: 75 Pages: 29-47 Published: JUN 2017
8. Lapusan, Ciprian; Balan, Radu; Hancu, Olimpiu; et al., Development of a Multi-Room Building Thermodynamic Model Using Simscape Library Conference on Sustainable Solutions for Energy and Environment (EENVIRO - YRC) Location: Bucharest, ROMANIA Date: NOV 18-20, 2015 EENVIRO-YRC 2015 - BUCHAREST Book Series: Energy Procedia Volume: 85 Pages: 320-328 Published: 2016
9. Lapusan, Ciprian; Hancu, Olimpiu; Rad, Ciprian; et al., Integrated learning platform based on Lego NXT and Matlab for teaching mechatronics 8th International Conference on Electronics, Computers and Artificial Intelligence (ECAI) Location: Ploiesti, ROMANIA Date: JUN 30-JUL 02, 2016 Book Series: International Conference on Electronics Computers and Artificial Intelligence Published: 2016

Significant solutions:
The development of the Matlab-dSpace research platforms with HIL-Hardware in the Loop, SIL-Software in The Loop, RCP-Rapid Control Prototyping applications
The implementation, testing and optimization of the modern/innovative control technics (state feedback control, optimal control, predictive control);
The optimization of the motion laws (elimination of shocks)-Cartesian robot with pneumatic action, industrial control technology (SPC201, FPC101)
Research on modelling and control of the energy consumption in buildings
Patents: 2

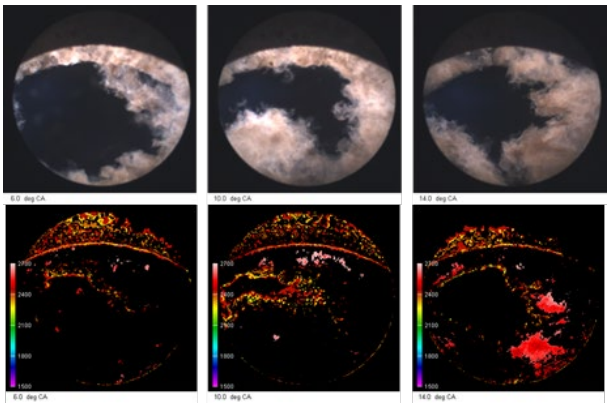
The offer addressed to the economic environment

Research & development	Fundamental research in mechatronics, energy, renewable energy, integronics, trans-disciplinary as well as related fields Team members have great knowledge in mechatronics, energy, renewable energy and related fields. Thus the research base in process control, electronic parts and components design, software design (microcontrollers, DSP, FPGA, PLC etc.), embedded systems, mechanical design, energy efficiency, energy audit, energetic management, sensor network, management and control of industrial processes etc. is assured.
Consulting	Consulting in any of the fields above mentioned may be done Due to a close collaboration with the productive sector, the research team is capable of collaboration with various industrial partners in order to subcontract any applied engineering services and products.
Training	The members of the team are accredited trainers and have a vast experience in the educational field (academics). Also, the team has experience in the development of the professional formation and reorientation trainings for adults.

TESTING, RESEARCH CERTIFICATION OF INTERNAL COMBUSTION ENGINES WORKING ON BIOFUELS LABORATORY

Contact details

Name	**Testing, Research and Certification of Internal Combustion Engines Laboratory**
Acronym	**TestEcoCel**
Logo	Departamentul de Autovehicule Rutiere şi Transporturi – Testare, Cercetare şi Certificare a Motoarelor cu Ardere Internă – Laborator de Universitatea Tehnică din Cluj-Napoca
Site	http://www.testecocel.utcluj.ro/
Tüv Certificate	No. S-120.99.241.00, given on 19.12.2012 for ISO 8178, Part 1,3 and 5
Address	103-105 Muncii Blvd., Cluj-Napoca, Romania
Faculty Department	**Faculty of Mechanical Engineering Automotive and Transportation Department**
Telephone	+40 264 415486 +40 264 401709
Fax	+40 264 415 486
Director	Prof. Dr. Eng. Nicolae Burnete
e-mail	nicolae.burnete@auto.utcluj.ro



Areas of expertise

Engine testing:
In the TestEcoCel Laboratory a series of functional, reliability and dynamic analysis can be performed on internal combustion engines designed for vehicles, powered by conventional fuel and also non conventional fuels.
Testing the quality of fuels on engines:
An analysis of the physical and chemical properties of fuels used in internal combustion engines can be made, and also the evaluation of pollutant emissions generated in the burn process.
Optical analysis of the combustion:
Using an endoscopic camera and the transparent components of the single cylinder research engine inside the Laboratory, some tests regarding the characteristic phenomenon of the combustion process can be made, based on the particularities of the burning flame generated by the different fuels used to powered the internal combustion engine.
Hardware in the loop testing
Using the engine mounted on the testbed, and a virtual environment, the team can implement different driving techniques, roads, manoeuvres, vehicles and the real system (engine) can be compared to a simulation version and validate its functionality. Also acceleration tests can be implemented.

Team

Prof. Dr. Eng. Nicolae Burnete, Prof. Dr. Eng. Bogdan Varga, Prof. Dr. Eng. Florin Mariaşiu, Assoc. Prof. Dr. Eng. Dan Moldovanu, Lect. Dr. Eng. Calin Iclodean, Lect. Dr. Eng.Nicolae Vlad Burnete, Lect. Dr. Eng. Levente Kocsis.

Representative projects

"Cooperation with Porsche Engineering", Industry research, (2016-2019)
"**Cooperation with LUK Oil Romania"**, Industry research, (2019)
"**Endurance testing of various gasoline blends mixed with metallic additives**", Industry research, (2012-2013)
TestEcoCel, "Testing laboratory of internal combustion engines that run on biofuels", POS CCE, (2009-2011)
"The influence or the energetic contribution on functional parameters and emissions of internal combustion engines that work with blends of biofuels", (2007-2009)
EnergoEcoFarm,"**Studies regarding the usage of oil based fuels as a reliable energy source for agricultural farms**", PN II-21046, (2007-2009)
BIOBENZ, "New, modern, unconventional technologies of superior biomass capitalization from sugar beet – obtaining gasoline", (2006-2008**)**

BIOGEF, "High energetic efficiency technology for producing an integrated biogas system and electrical energy from bio mass, for Romanian farms", (2006-2008)
ECOTRANS, "Possibilities and limits of greening urban transportation through vegetable oil fuels", CEEX Program, (2005-2008)

Significant results

The most representative publications of the past 5 years:

1. Mattson, J., Burnete, N. V., Depcik, C., Moldovanu, D., & Burnete, N. (2019). Second law analysis of waste cooking oil biodiesel versus ULSD during operation of a CI engine. *Fuel*, *255*, 115753.
2. Burnete, N. V., Balint, R. J., Măgherusan, C. A., & Moldovanu, D. (2019, October). Performance, Combustion and Emissions Study of a DI Diesel Engine Running on Several Types of Diesel Fuels. In *SIAR International Congress of Automotive and Transport Engineering: Science and Management of Automotive and Transportation Engineering* (pp. 153-159). Springer, Cham.
3. Varga, Bogdan Ovidiu; Sagoian, Arsen; Mariasiu, Florin, Prediction of Electric Vehicle Range: A Comprehensive Review of Current Issues and Challenges ENERGIES Volume: 12 Issue: 5 Article Number: 946 Published: MAR 1 2019
4. Varga, Bogdan Ovidiu; Mariasiu, Florin, INDIRECT ENVIRONMENT-RELATED EFFECTS OF ELECTRIC CAR VEHICLES USE ENVIRONMENTAL ENGINEERING AND MANAGEMENT JOURNAL Volume: 17 Issue: 7 Pages: 1591-1597 Published: JUL 2018
5. Burnete, N. V.; Burnete, N.; Jurchis, B.; et al., Influences of diesel pilot injection on ethanol autoignition - a numerical analysis NTERNATIONAL CONGRESS OF AUTOMOTIVE AND TRANSPORT ENGINEERING - MOBILITY ENGINEERING AND ENVIRONMENT (CAR2017) Book Series: IOP Conference Series-Materials Science and Engineering Volume: 252 Article Number: UNSP 012066 Published: 2017
6. Iclodean, C.; Varga, B.; Burnete, N.; et al., Comparison of Different Battery Types for Electric Vehicles INTERNATIONAL CONGRESS OF AUTOMOTIVE AND TRANSPORT ENGINEERING - MOBILITY ENGINEERING AND ENVIRONMENT (CAR2017) Book Series: IOP Conference Series-Materials Science and Engineering Volume: 252 Article Number: UNSP 012058 Published: 2017
7. F. Mariasiu, N. V. Burnete, D. Moldovanu, B. O. Varga, C. Iclodean, and L. Kocsis, "EFFECTS OF BIOETHANOL ULTRASONIC GENERATED AEROSOLS APPLICATION ON DIESEL ENGINE PERFORMANCES," *Thermal Science*, vol. 19, pp. 1931-1941, 2015.
8. Varga BO, Mariasiu F, Moldovanu D, Iclodean C. Electric and Plug-In Hybrid Vehicles. Cham: Springer International Publishing; 2015.

Significant solutions:
Research regarding the use of rape seed oil based fuels with diesel, for the compression ignited engine, to reduce pollution; Studies regarding combustion modeling in a compression ignited engine fueled with biodiesel for better performance; Studies and research regarding simulation of an internal combustion engine that works with biofuels; Studies and research regarding the possibilities of improving the internal combustion engine performance through supercharging;
Products and technologies:
Active Dynamometer – capable of functioning also as a motor, for starting the single cylinder engine, capable of working at 12000 rot/min, developing a power of 220kW and a torque of 540Nm; and capable of working as a controlled generator, for loading the engine; Single cylinder research engine – the engine has three interchangeable kits: Kit for gasoline engine, for direct injection and indirect injection (PFI); Kit for transparent engine, with a quartz liner in order to film inside the combustion chamber using cameras and a quartz cylinder head, for filming using the camera and a mirror system; Kit for Diesel engine, common rail, direct injection, with two orifices in the cylinder head for the endoscopic camera, to film the processes inside the combustion chamber; Open ECU – the Electronic Control Unit of the engine, Hardware in the Loop system
Patents:
Mariasiu E, Burnete N, Varga B., Cold start device for internal combustion engines supplied with biodiesel fuel, RO127032-A2
Mariasiu Florin Emil, Varga Bogdan Ovidiu, Deac Teodora Alexandra, Device For Reducing Lube Oil Viscosity Upon Start Of Internal Combustion Engines At Reduced Ambient Temperatures, 128768 / RO128768-A2 / a 2011 01383 - 2016

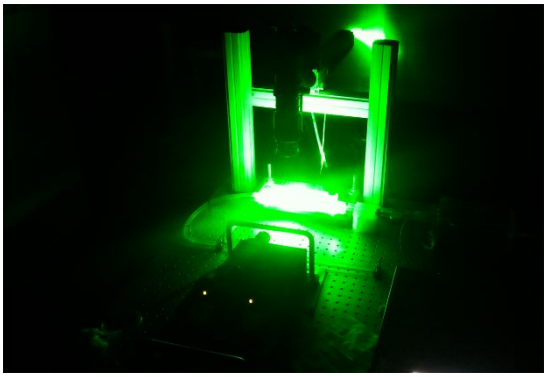
The offer addressed to the economic environment

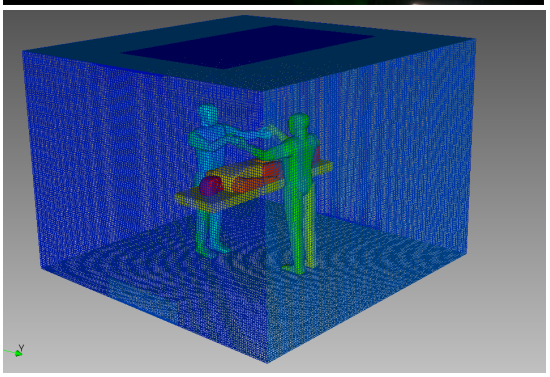
Research & development	In the applied engineering service domain, our research group offers technical expertise regarding the dynamic performance, chemical and nuisance while using different types of fuels for the internal combustion engines; Modeling and analysis of the combustion process of an internal combustion engine using different types of fuels; Analysis of biodiesel burn particularities in a compression ignited engine and study of bio-ethanol burn performance in a spark ignited engine.
Consulting	In the consulting domain, our research group can provide data regarding fuel performance and internal combustion engine performance to internal combustion engine producers, to fuel producers and also for research centers. The internal combustion engine is tested as if it is mounted on the vehicle, due to the high performance of the dynamometer.
Training	The available trainings are in Engine testing, Engine certification, and Fuel testing domain.

ADVANCED FLOW AND HEAT TRANSFER INVESTIGATION GROUP

Contact details

Name	**Advanced Flow and Heat Transfer Investigation Group**
Acronym	**AtFLOW**
Logo	AtFLOW ADVANCED INVESTIGATION GROUP
Site	https://eeris.eu/ERIF-2000-000L-2002 http://research.utcluj.ro/tl_files/research/Research Domain/Mechanical Engineering/AtFLOW_Giurgea.pdf
Address	103-105 Muncii Blv., Rooms: B 303& D017, 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Mechanical Engineering Mechanical Engineering Department**
Telephone	+40 752222732
Fax	
Director	Assist. Prof.Dr. Eng. Corina Giurgea
e-mail	Corina.Giurgea@termo.utcluj.ro





Areas of expertise

Biomedical Engineering
- Flows through Bypass Grafts and Mechanical Heart Valves - numerical (CFD) and experimental investigations (PIV)
Heat and Mass Transfer
-Free and Impinging Jets with application in Personalized Ventilation; Heating Ventilation and Air Conditioning; Heat Transfer; Combustion: reactive and non-reactive flows – numerical (CFD), experimental investigations
Fluid Flow Control Systems
- Design and manufacture of controllers for fluid systems; Sensorics; Analyse and signal processing

Team

Assist. Prof. Dr. Eng. Corina Giurgea, Prof. Dr. Eng. Victor Hodor, Assoc. Prof. Dr. Eng. Florin Bode, Assist. Prof. Dr. Eng. Lucian Nascutiu, Assist. Dr. Eng. Daniel Banyai, Dr. Med. Octavian Ioan Budiu

Representative projects

INSIDE, "**Innovative strategies of HVAC systems for high indoor environmental quality in vehicles",** PN-II-PT-PCCA,http://cambi.ro/inside/ (2014-2017)
EQUATOR, **"Advanced strategies for high performance indoor Environmental QUAliTy in Operating Rooms"**, PN-II-PT-PCCA, http://cambi.ro/equator/index.html (2012-2016)
"Fluid dynamics analysis for innovative personalized ventilation diffusers for automotive and building applications", PN-II-RU-PD,http://www.cambi.ro/ventilare-personalizata-pd-bode/index.html (2011-2013)
MAACH, **"Advanced Methods of Analysis and Control in Hemodynamics, with applications in peripheral vascular surgery",** CNMP PN-II- (Complex Partnership Project), http://www.cnmp.ro:8083/pncdi2/program4/documente/2010/sedinta/rez/D8/82-086.pdf (2008-2011)
"The control and numerical analysis of combustion instability by using the acoustic analogy",CNCSIS PN II,http://www.termo.utcluj.ro/pncd2_2007_IDEI/ (2007-2010)
SHATEMP, **"Adaptive hydraulic systems for small-scale wind turbines",** CNMP PN-II(Complex Partnership Project), http://shatemp.tuiasi.ro/ (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. Florin BODE, Claudiu PATRASCU, Ilinca NASTASE, Heat and mass transfer enhancement strategies by impinging jets: A literature review, Thermal Science, 2021 Volume 25, Issue 4 Part A, Pages: 2637-2652, https://doi.org/10.2298/TSCI200713227B, ISSN 0354-9836, eISSN 2334-7163, 2021
2. Laurențiu TACUTU, Florin BODE, Ilinca NĂSTASE, Cristiana CROITORU, AngelDOGEANU, Experimental and numerical study on the thermal plumes of a standing and lying human in an operating room, Science and Technology

for the Built Environment, DOI:10.1080/23744731.2021.1963133, ISSN: 2374-4731 print / 2374-474X online, Pag 1-19, 2021
3. Florin BODE, Amina MESLEM, Claudiu PATRASCU, Ilinca NASTASE, Flow and wall shear rate analysis for a cruciform jet impacting on a plate at short distance, Progress in Computational Fluid Dynamics, An Int. J., DOI: 10.1504/PCFD.2020.107276, Volume 20, No.3, p169-185, WOS:000551901900004, ISSN: 1468-4349, eISSN: 1741-5233, 2020
4. Ionut Voicu, Rania Rizk, Hasna Louahlia, Florin Bode, Hamid Gualous, "Experimental and numerical study of supercapacitors module with air-cooling", Applied Thermal Engineering, https://doi.org/10.1016/j.applthermaleng.2019.113903, IF.4.026, vol. 159, August 2019
5. Boldizsar, Razvan Alin; Ordean, Mihaela; Giurgea, Corina, Designing, Implementing and Testing the Acoustic Component of a Text to Speech System for the Romanian Language Conference: 15th International Conference on Informatics in Economy (IE 2016), Education, Research & Business Book Series: Lecture Notes in Business Information Processing Volume: 273 Pages: 101-114 Published: 2018
6. C. V. Croitoru, I. Nastase, F. I. Bode, and A. Meslem, "Thermodynamic investigation on an innovative unglazed transpired solar collector", *Solar Energy*, vol. 131, pp. 21-29, Jun 2016.
7. Corina Giurgea, Florin Bode, Lucian Nascutiu, Cristian Dudescu, "Considerations Regarding the Optically Transparent Rigid Model for PIV Investigations. A Case Study. Part 2: Notes on the Failure of the Model", in *Energy Procedia* 85 (2016) 235 – 243, 2016
8. Lucian Nascutiu, Corina Giurgea, Mihai Damian, Florin Bode, Octavian Budiu, Octavian Andercou, "Considerations Regarding the Optically Transparent Rigid Model for PIV Investigations. A Case Study. Part1: Model Manufacturing", in *Energy Procedia 85* (2016) 358 – 365, 2016
9. Victor Hodor, Dan Birle, Lucian Nascutiu, Mircea Diudea, "CFD Prediction with LES for Psycho Acoustic Relevance in Ventilation", in *Energy Procedia* 85 (2016) 252 –259, 2016
10. Lucian Nascutiu, Olivier Reinertz, Christoph Siebert, Hubertus Murrenhoff, "High Performance Actuators for Fluid Power Drives", *The 9TH INTERNATIONAL FLUID POWER CONFERENCE IFK2014*, Vol. III, 242-253, Aachen, Germany, March 2014.

Significant solutions:

High accuracy mapping of the flow fields by using PIV and CFD investigations with possible future applications for: the graft geometry optimization (flow through a femoral artery bypass) respectively the nozzle design optimization (in Personalized Ventilation)

Products and technologies:

A technology for manufacturing optically transparent models suited to PIV investigations. The models consist of idealized bifurcations or axisymmetric channels machined in blocks of Plexiglass with a high degree of transparency and refractive index that could be matched with that of certain working fluids (Technology developed in cooperation with colleagues from the Department of Machine Building of the UTCN).

An experimental setup integrating a flow circuit reproducing the flow through a femoral artery bypass and a 2D PIV system that would allow the investigation by the PIV method of pulsating flows similar to those in a segment of the human circulatory system

Others:

Creation of a laboratory that provides appropriate conditions (darkroom, flat surfaces, optical table and devices, 2D PIV system, experimental setups) for flow investigations through optical methods

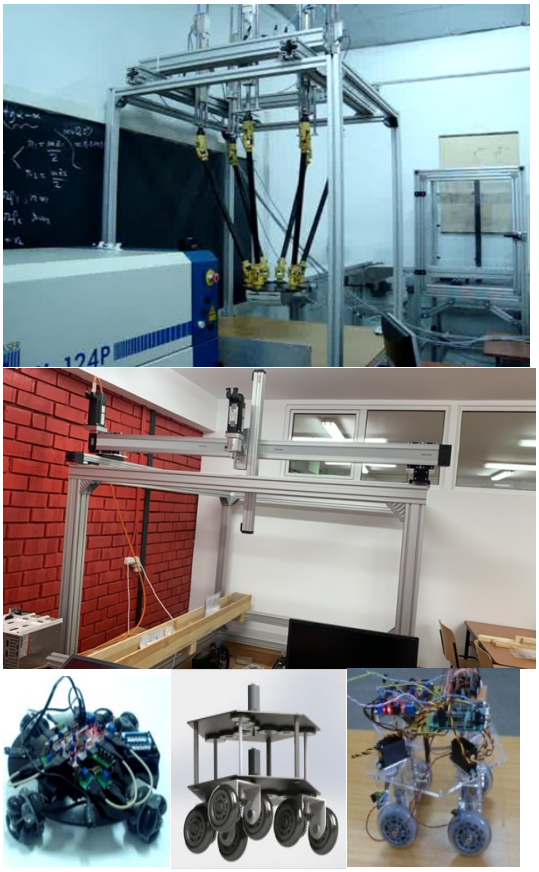
The offer addressed to the economic environment

Research & development	Providing support (expertise and facilities) for research in connected fields like: hemodynamics, biomedical flows, thermo-gas-dynamics/combustion by the complementary use of CFD techniques and optical PIV methods. Developing/upgrading the experimental setup used to investigate the pulsed flows similar to that through a bypass (currently in the experimental model stage) with a view toward potential use in testing vascular prostheses Designing and machining customized optically transparent models of axisymmetric channels and bifurcations appropriate for PIV investigations Developing solutions for PV (Personalized Ventilation) and HVAC (Heating Ventilation and Air Conditioning) based on CFD numerical simulations Measuring viscosities for a wide range of fluids, including non-Newtonian fluids, and low viscosity fluids (e.g. possible beneficiaries in cosmetics or pharma industries) Measuring parameters for monitoring the indoor air quality (temperature, humidity, air velocity, CO2 concentrations)
Consulting	Consulting and technical support for designing, building and evaluation of thermo-energy and combustion equipment. Technical and judicial expertise in the area of: using thermal equipment and combustion
Training	Courses for providing surgeons with a new approach to reconstructive bypass surgery from the engineering perspective. Introductory course in numerical simulation of fluid flow and heat transfer for undergraduate students and students at the MSc doctoral and postdoc level (2018-2021: 12 Undergraduate St. + 3MSc.St. + 2 PhD St +1 postdoc.) Initial training in in PIV optical measurement techniques for students at the M.Sc. and doctoral level.

INTELLIGENT RECONFIGURABLE SYSTEMS LABORATORY

Contact details

Name	**Intelligent Reconfigurable Systems Research Laboratory**
Acronym	**SIR**
Logo	SIR
Site	http://mdm.utcluj.ro/Cercetare/Lab_SIR/index.html
Address	103-105, Muncii Blv., 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automotive, Mechatronics and Mechanical Engineering - Technical University of Cluj-Napoca** **Department of Mechatronics and Machine Dynamics**
Telephone	+40 751393410
Fax	+40 264 594491
Director	Prof. Dr.-Ing. Cornel Brisan
e-mail	cornel.brisan@mdm.utcluj.ro



Areas of expertise

Advanced Technologies for Industrial Process Control
Identifying and modeling highly complex processes
New paradigms of manufacturing systems
Technologies and High Precision Mechanical Products and Mechatronic Systems
Applied mechatronics; Intelligent mechatronic products and systems
Techniques, metrologies and precise and highly precise measuring instruments
Conventional and unconventional automatic drive systems and equipment, with accurate and highly accurate linear or angular positioning
Robotics and high precision microrobotics with or without autonomous motions
High accuracy conventional and unconventional production techniques
Assembly technologies, microassembly, rapid assembly and high accuracy automatic disassembly
Innovative Products and Technologies for Transport and Automotive Industry
Products and technologies for automotive industry
Development of New Types of Mechanical Transmissions
Cylindrical and frontal ball transmissions
Processional variable speed
Diagnosis and maintenance of Industrial Equipment
Technologies for vibration reduction in dynamic systems
Predictive maintenance systems

Team

Prof. Dr.-Ing. Cornel Brisan, Prof. Dr. Eng. Mircea Bara, Prof. Dr. Eng. Mihai Olimpiu, Assist. Prof. Dr. Eng. Calin Rusu, Conf.dr.ing. Olimpiu Hancu, Sl.dr.ing. Lapusan Ciprian, Asist.dr.ing. Rad Ciprian, Ddr. Trif Mihaela

Representative projects

SIRAMAD – "Autonomous robotic systems for waste management in the context of the intelligent city", PNIII-P1-1.2 PCCDI 2018, (2018-2020)
"Research concerning theoretical development and experimental validation of Reconfigurable Haptic Interfaces for Virtual Reality", Alexander von Humboldt Foundation (2012-2015)
"Reconfigurable haptic interfaces used in dynamic contact reproduction - Theory Developmentsethical and

experimental”, PNII-PT-PCCA-2011-3.1-0190, (2012-2016)
“Research concerning develpment of machine tools with reconfigurable topology”, Grant ANCS Idei (2007-2010)
“Research and development of the high accuracy positioning robotic systems with extended mobility”, Grant ANCS, (2007-2010)
“Modeling, simulation and realization of mobile minirobots with adaptable structure”, Grant type A CNCSIS, (2006-2007)
“Modelling, simulation and development of robotic system families used for inspection and exploration”, Grant PN-II-Idei, (2007-2010)
“Mathematical Modeling and Experimental Research on Anthropomorphic Parallel Robots”, Alexander von Humboldt Foundation, (2004-2008)

Significant results

The most representative publications of the past 5 years:

1. Brisan C., Introduction in optimisation of Industrial Robotics. Theory and Applications. Ed Academiei Romanne, 2019.
2. C Lapusan, M Lapusan, C Brisan, V Chiroiu , Aspects relating to development of modular design in mass customization production, PROCEEDINGS OF THE ROMANIAN ACADEMYOF THE ROMANIAN ACADEMY , Series A, Volume 20, Number 4/2, 2019, pp. 377–382.
3. C Boanta, C Brisan Optimization of a Robot Used for a Solid Waste Selection System, International Journal of Modeling and Optimization 9 (6), 2019.
4. 1. Tatar M.O., Pecie R. - Modular omnidirectional mobile robot with four driving and steering wheels, IOP Conference Series: Materials Science and Engineering, vol. 514, 2019, p 012019, doi:10.1088/1757-899X/514/1/012019.
5. Gyarmati, M., Tătar M.O., - Locomotion systems for search and rescue robots, Revista Robotica & Management, ISSN 1453-2069, Vol. 24, nr. 1, 2019, pp. 8-13.
6. Tătar, M.O., Barbu, P., - Studies regarding mobile robots that are adaptable to rough terrain, Revista Robotica & Management, ISSN 1453-2069, Vol. 24, nr. 1, 2019, pp. 24-29.
7. Chiroiu, Veturia; Brisan, Cornel; Dumitriu, Dan; et al., A sonification algorithm for developing the off-roads models for driving simulators MECHANICAL SYSTEMS AND SIGNAL PROCESSING Volume: 98 Pages: 310-323 Published: JAN 1 2018
8. Munteanu, Ligia; Brisan, Cornel; Chiroiu, Veturia; et al., STRAIN AMPLITUDE DEPENDENT INTERNAL FRICTION AND THE YOUNG'S MODULUS DEFECT IN DAMAGED SOLIDS ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 60 Issue: 4 Pages: 485-490 Published: NOV 2017
9. Chiroiu, Veturia; Munteanu, Ligia; Dumitriu, Dan; et al., ON THE SONIC FILMS WITH DEFECTS PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE Volume: 18 Issue: 4 Pages: 378-385 Published: OCT-DEC 2017
10. Fodor, Ferenc; Brisan, Cornel; Chiroiu, Veturia, The Development of a Pneumatically Actuated Driving Simulator IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR) Location: Cluj Napoca, ROMANIA Date: MAY 19-21, 2016 Book Series: IEEE International Conference on Automation Quality and Testing Robotics Pages: 185-190 Published: 2016
11. L. Munteanu, V. Chiroiu, C. Brisan, D. Dumitriu, T. Sireteanu, and S. Petre, "On the 3D normal tire/off-road vibro-contact problem with friction", *Mechanical Systems and Signal Processing*, vol. 54-55, pp. 377-393, Mar 2015.
12. L. Munteanu, C. Brisan, V. Chiroiu, D. Dumitriu, and R. Ioan, "Chaos-hyperchaos transition in a class of models governed by Sommerfeld effect", *Nonlinear Dynamics*, vol. 78, pp. 1877-1889, Nov 2014.
13. L. Munteanu, V. Chiroiu, S. Donescu, and C. Brisan, "A new class of sonic composites", *Journal of Applied Physics*, vol. 115, Mar 2014.
14. V. Chiroiu, C. Brisan, M. Popescu, I. Girip, L. Munteanu, “On the sonic composites without/with defects”, in *J. Apply Phys.*, vol. 114, 2013
15. C. Brişan, R.V. Vasiu, L. Munteanu, “A Road Auto-Generating Algorithm for Developing the Road Virtual Models Usable in Driving Simulators”, in *Transportation Research Part C: Emerging Technologies*, vol. 26, 2013, pp.160-179

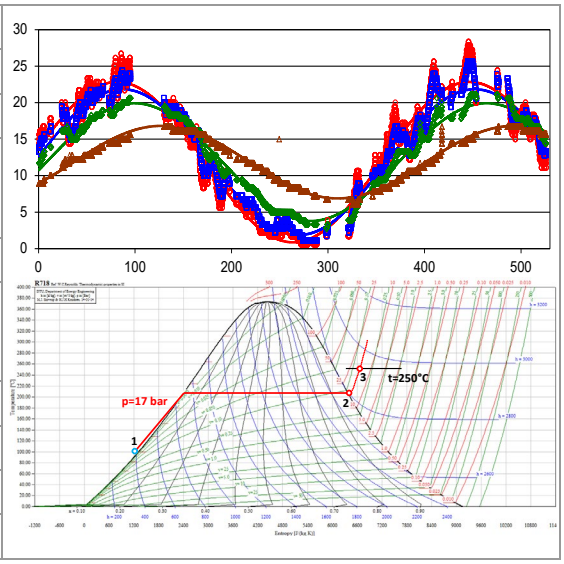
The offer addressed to the economic environment

Research & development	Modeling complex intelligent systems. Developing robotic systems for manufacturing Development robotic inspection systems Development omnidirectional mobile robots Developing virtual models
Consulting	For automated manufacturing systems For precision mechanical systems Pipe inspection
Training	Computer aided design and development of mechatronic systems Development of manufacturing technologies Vibratory systems analysis Control algorithms for robots

INSTRUMENTAL ANALYSIS

Contact details

Name	**Instrumental Analysis**
Acronym	**IA**
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Mechanical%20Engineering/5_CBalan.pdf
Address	103-105 Bd. Muncii, Cluj-Napoca
Faculty Department	**Faculty of Mechanical Engineering** **Faculty of Materials and Environmental Engineering**
Telephone	+40 745 014725
Fax	-
Director	Prof. Dr. Eng. Mugur Ciprian Balan
e-mail	mugur.balan@termo.utcluj.ro



Areas of expertise

Fundamental research fields: Chemistry, Environment and materials science; Biology, Genetics and medicine; Physics and Technological physics; Fields at frontier
Applied research fields: Theoretic computer science; Advanced informatics systems; Sustainable energy systems; Energy security; Pollution reduction; Alimentary safety and security; Biotechnology

Team

Prof. Dr. Eng. Mugur Ciprian Balan, Prof. Dr. Lorentz Jantschi, Assoc. Prof. Dr. Eng. Paula Veronica Ungureșan, As. Dr. Eng. Ancuta Magurean

Representative projects

SIRCLES - Replicable large impact Symbiotic value chains for cross sectoral optimization of resource efficiency and circularity in Energy Intensive Industries (2020)
http://mugurbalan.eu/doc/SIRCLES.pdf
PVEFF - Increased energy efficiency in municipal buildings through the use of photovoltaic panels (2019)
http://www.mugurbalan.eu/doc/pv_utcn.pdf
LCGM - Technical and economic study about the combustion and utilisation aspects of the low calorific gas mixtures (2019)
http://mugurbalan.eu/doc/LCGM.pdf
REMSIS - Renewable energy management system for small isolated communities (2014-2017)
http://remsis.utcluj.ro/

Significant results

The most representative publications of the past 5 years:

1. Abrudan,A.C., Pop,O.G., Serban,A., Bălan,M.C. - *New Perspective on Performances and Limits of Solar Fresh Air Cooling in Different Climatic Conditions*, Energies, 12(11) (2019), pp. 1-21, ISSN: 1996-1073 (IF: 2.707 / 2018) https://www.mdpi.com/1996-1073/12/11/2113
2. Pop,O.G., Fechete Tutunaru,L., Bode,F., Abrudan,A.C., Bălan,M.C. - *Energy efficiency of PCM integrated in fresh air cooling systems in different climatic conditions*, Applied Energy, 212 (2018) pp. 976-996, ISSN: 0306-2619 (IF: 7.900 / 2017), https://doi.org/10.1016/j.apenergy.2017.12.122
3. Ungureşan,P.V., Porumb,R.A., Petreuş,D., Pocola,A.G., Pop,O.G., Bălan,M.C. - *Orientation of façades for active solar energy applications in different climatic conditions*, Journal of Energy Engineering, 143(6) (2017): 04017059:1-11 (IF: 1.944 / 2016), https://doi.org/10.1061/(ASCE)EY.1943-7897.0000486
4. Neamtu,M.O., Bălan,M.C., Petreuş,D., Leuca,T., Trip,N.D. - *Considerations on a geothermal electric power generator based on organic Rankine cycle as a part of a smart-grid*, Revue roumaine des sciences techniques - Série Électrotechnique et Énergétique, 62(4) (2017), pp. 431-435, ISSN: 0035-4066 (IF: 1.036 / 2016), http://revue.elth.pub.ro/viewpdf.php?id=715
5. Todoran,T.P., Bălan,M.C. - *Long term behavior of a geothermal heat pump with oversized horizontal collector*, Energy and Buildings, 133 (2016), pp. 799-809 (IF: 4.067 / 2016), http://dx.doi.org/10.1016/j.enbuild.2016.10.037
6. Petreus, D. Bălan,M.C., Pop,O.G., Etz,R., Patrau,T. - *Evaluation of the PV energy production determined by measurements, simulation and analytical calculations*, E3S Web of Conferences 85 (2019) pp. 1-8., https://doi.org/10.1051/e3sconf/20198504002

7. Pop,O.G., Iuga,C.A., Fechete Tutunaru,L.V., Bălan,M.C. - *Modeling and experimental validation of the thermal behavior of PCM using DSC input data*, The 3rd Joint International Conference on Energy Engineering and Smart Materials (ICEESM-2018) and International Conference on Nanotechnology and Nanomaterials in Energy (ICNNE-2018), AIP Conf. Proc. 2004, 020005-1–020005-7, https://doi.org/10.1063/1.5051100
8. Pop,O.G., Abrudan,A.C., Dogeanu,A.M., Pocola,A.G, Fechete Tutunaru,L.V., Bălan,M.C. - *Dynamic thermal modeling of buildings and application to a hospital*, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), Cluj-Napoca, 24-26 May (2018) pp. 1-6, DOI: 10.1109/AQTR.2018.8402769
9. Pop,O.G., Abrudan,A.C., Adace,D.S, Pocola,A.G, Bălan,M.C. - *Potential of HVAC and solar technologies for hospital retrofit to reduce heating energy consumption*, E3S Web of Conferences 32 (2018) pp. 01016: 1- https://doi.org/10.1051/e3sconf/20183201016
10. Pop,O.G., Fechete Tutunaru,L.V., Bode,F., Bălan,M.C. - *Preliminary investigation of thermal behaviour of PCM based latent heat thermal energy storage*, E3S Web of Conferences 32 (2018) pp. 01017: 1-8, https://doi.org/10.1051/e3sconf/20183201017
11. Porumb,R.A., Porumb,B.A., Bălan,M.C. - *Numerical investigation on solar absorption chiller with LiBr-H2O operating conditions and performances*, Energy Procedia 112 (2017) pp. 108-117, http://dx.doi.org/10.1016/j.egypro.2017.03.1071
12. Pop,O.G., Fechete Tutunaru,L.V., Bălan,M.C. - *Numerical model for solidification and melting of PCM encapsulated in spherical shells*, Energy Procedia 112 (2017) pp. 329-336, http://dx.doi.org/10.1016/j.egypro.2017.03.1060
13. Pocola,A.G., Serban,A., Bălan,M.C. - *Complex and efficient waste heat recovery system in aluminum foundry*, Energy Procedia 112 (2017) pp. 497-502, http://dx.doi.org/10.1016/j.egypro.2017.03.1134
14. Tacutu,L., Pocola,A., Bălan,M.C., Iordache,V - *Acoustic measurements for two configurations of acoustic casings with applications on ambient noise pollution*, International Conference on Energy and Environment (CIEM), Bucharest (2017) pp. 129-133., http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8120849&isnumber=8120754
15. Pop,O.G., Bălan,M.C. - *Assesments about calculation of the PCM's phase change temperature in the climatic conditions of Romania*, Termotehnica, Supl. 1 (2016), pp. 37-42, http://www.agir.ro/buletine/2647.pdf
16. Porumb,B.A., Bălan,M.C., Porumb,R.A., - *Potential of indirect evaporative cooling to reduce the energy consumption in fresh air conditioning applications*, Energy Procedia, 85 (2016), pp. 433-441, http://dx.doi.org/10.1016/j.egypro.2015.12.224
17. Boţu,R.A., Porumb,B.A., Bălan,M.C. - *Baseline evaluation of potential to use solar radiation in air conditioning applications*, Energy Procedia, 85 (2016), pp. 442-451, http://dx.doi.org/10.1016/j.egypro.2015.12.225
18. Porumb,B.A., Ungureşan,P.V., Fechete Tutunaru,L.V., Serban,A., Bălan,M.C. - *A review of indirect evaporative cooling technology*, Energy Procedia, 85 (2016), pp. 461-471, http://dx.doi.org/10.1016/j.egypro.2015.12.228
19. Porumb,B.A., Ungureşan,P.V., Fechete Tutunaru,L.V., Serban,A., Bălan,M.C. - *A review of indirect evaporative cooling operating conditions and performances*, Energy Procedia, 85C (2016), pp. 452-460, http://dx.doi.org/10.1016/j.egypro.2015.12.226
20. Ungureşan,P.V., Petreuş,D., Pocola,A.G., Bălan,M.C. - *Potential of solar ORC and PV systems to provide electricity under Romanian climatic conditions*, Energy Procedia, 85 (2016), pp. 584-593

Patents:

M. C. Bălan, et al. : RO126148B1: Heat pump to provide heating temperature at two different levels. Owner: SC Convergo SRL

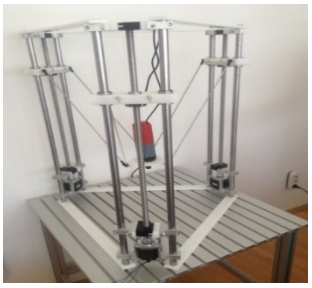
The offer addressed to the economic environment

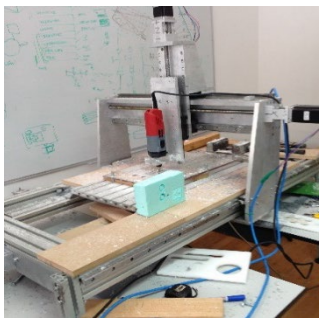
Research & development	R&D in the fields of: Energy efficiency, Renewable energies, Chemistry; Computer science; Mathematics; Physics; Horticulture; Biotechnologies; Experimental design; Data acquisition, Computational fluid dynamics, Cogeneration
Consulting	Consulting in the fields of: Energy efficiency, Renewable energies, Chemistry; Computer science; Mathematics; Physics; Horticulture; Biotechnologies; Experimental design; Data acquisition, Computational fluid dynamics, Cogeneration
Training	Training in the fields of: Energy efficiency, Renewable energies, Chemistry; Computer science; Mathematics; Physics; Horticulture; Biotechnologies; Experimental design; Data acquisition, Computational fluid dynamics, Cogeneration

ADVANCED MECHATRONIC SYSTEMS LABORATORY

Contact details

Name	**Advanced Mechatronic Systems Laboratory**
Acronym	**AMS**
Logo	Advanced Mechatronic Systems
Site	www.mdm.utcluj.ro
Address	103-105 Muncii Av., Cluj-Napoca, Romania
Faculty Department	**Faculty of Automotive, Mechatronics and Mechanical Engineering** **Mechatronics and Machine Dynamics Department**
Telephone	+40 264 401600
Director	Sergiu-Dan Stan, Associate Professor, PhD
e-mail	Sergiu.Stan@mdm.utcluj.ro





Areas of expertise

Advanced Mechatronic Systems:
- Virtual Reality: design mechatronic systems with the assistance of virtual reality technology, which can benefit clearly from immersion and 3D. This virtual reality-based approach can be applied for the testing of intelligent mechatronic systems. Virtual reality facilitates the analysis of tests by the combination of virtual 3D models and visualization techniques.
- **Optimal design and control of parallel robots:** Parallel robots present better performances in comparison with serial robots. However, due to the strong dependence of geometric parameters and their performances, the corresponding design problems for the parallel robots are much more complex and the adequacy and effectiveness of the design method become more critical. In order to overcome this genetic algorithm optimization can be applied.
- **Haptic devices and Exoskeletons:** these mechatronic systems can be used for virtual reality and tele-presence applications. The development of even more capable devices that can accurately reproduce a large range of haptic information is an important component for the technologies of virtual reality and tele-presence. Exoskeletons can bring up a valuable contribution to the applications where the workspace is strategic.
- **Mechatronics research and training:** current research includes development of concepts, algorithms, theories, and methodologies for synergistic integration of precision mechanical engineering with advanced electronics and computer control in the design of mechatronic systems.
- **Advanced programming in MATLAB:** advanced topics like GUIs/APPs, Simulink/Simscape, interfaces with Arduino/Raspberry Pi & QUANSER control boards, ROS with MATLAB.

Team

Assoc. Prof. Dr. Eng. Sergiu-Dan Stan, Assoc. Prof. Dr. Eng. Emil Teuțan, Senior lecturer. Dr. Eng. Alin Plesa, Eng. Mihai Dan Rusu, Assist. Prof. Dr. Eng. Ionut Muntean, Research Engineer Eng. Alexandru Oarcea, Research Eng. Victor Cobilean, Research Eng. Miruna Peris

Representative projects

EXORAS. "**New Haptic Arm Exoskeletons for Robotics and Automation in Space**" (2012-2015). National project, the project seeks to develop in Romania capacity building at national level and to stimulate Romania's participation to international space missions and programs – in particular ESA, in the field of Robotic Exploration. The impact will be to develop new haptic arm exoskeleton to enable in-space force-feedback telemanipulation with redundant robotic arms, and so help enable new policies in Romania such as robotic exploration, as well as supporting Romania towards increased participation to ESA programs.
GREENet. "**Globally Recoverable and Eco-friendly E-equipment Network with Distributed Information Service Management**" (2011-2014). European FP7 project, aimed to establish closer international cooperation and to share and develop research on globally sustainable Waste Electrical and Electronic Equipment (WEEE) management is timely and significant. This GREENet project is aimed at teaming up multi-disciplinary research teams from the EU and China to enhance the knowledge base and achieve research synergies as integrated technical solutions in the relevant areas.
SMART. "**Complex mechatronic systems for medical applications**" (2008-2011). National project, the project aimed of realization of integrated, innovative system regarding the complex mechatronic systems for medical applications.
CLEM. "**CLoud services for E-learning in Mechatronics technology**" (2012-2013). European project, Leonardo da

Vinci Development of Innovation type, the CLEM project is the first step to fulfil the vision of establishing "a global Mechatronics technology in VET knowledge repository for exchange and sharing".
MIND. Development of mechatronics skills and innovative learning methods for Industry 4.0 (2019-2021).
XP2P. Crossing Borders: Peer-to-Peer Education in Mechatronics (2019-2022).
SMART2. "Advanced integrated obstacle and track intrusion detection system for smart automation of rail transport" (2019-2022). SMART2 research on-board long-range all-weather obstacle detection (OD) and track intrusion detection (TID) system. 2 new systems will be also researched, innovate and developed: advanced SMART2 trackside (TS) /airborne OD&TID systems. All 3 systems will be integrated into a holistic OD&TDI system via interfaces to central Decision Support System (DSS). **AMS laboratory** responsible for airborne OD&TID system.

Significant results

The most representative publications of the past 5 years:

1. Teutan, Emil; Rafa, Vasile, ANALYSIS AND FUZZY SIMULATION OF A PUMP WITH ECCENTRIC FOR NATURAL GASES ODORIZED ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING Volume: 61 Issue: 1 Pages: 55-60 Published: MAR 2018
2. Tatar, Mihai Olimpiu; Petre, Barbu; Teutan, Emil, Design and Development of the Hybrid Mobile Robots 21st IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR THETA) Location: Cluj-Napoca, ROMANIA Date: MAY 24-26, 2018 Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
3. Verba, Nandor; Chao, Kuo-Ming; James, Anne; et al., Platform as a service gateway for the Fog of Things ADVANCED ENGINEERING INFORMATICS Volume: 33 Pages: 243-257 Published: AUG 2017
4. Lovasz, Erwin-Christian; Margineanu, Dan Teodor; Ciupe, Valentin; et al., Design and control solutions for haptic elbow exoskeleton module used in space telerobotics MECHANISM AND MACHINE THEORY Volume: 107 Pages: 384-398 Published: JAN 2017
5. A. Paljanos, S. Miclaus, P. Bechet, and I. Munteanu, "Assessment of mobile phone user exposure to UMTS and LTE signals: comparative near-field radiated power levels for various data and voice application services", *Journal of Electromagnetic Waves and Applications*, vol. 30, pp. 1101-1115, 2016.
6. Chao, Kuo-Ming; James, Anne E.; Nanos, Antonios G.; et al., Cloud E-learning for Mechatronics: CLEM FUTURE GENERATION COMPUTER SYSTEMS-THE INTERNATIONAL JOURNAL OF ESCIENCE Volume: 48 Pages: 46-59 Published: JUL 2015
7. Racz, AA, Muntean, I., Stan, SD, "A look into electric/hybrid cars from an ecological perspective", *8TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING*, INTER-ENG 2014 Book Series: Procedia Technology Volume: 19 Pages: 438-443 Published: 2015
8. Busu, Alexandra Antonia; Muntean, Ionut; Stan, Sergiu-Dan, „An analysis of the current challenges of WEEE remanufacturing", *8TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING*, INTER-ENG 2014 Book Series: Procedia Technology Volume: 19 Pages: 444-450 Published: 2015

Products and technologies
1. Real-time control of mechatronic systems
2. Optimal design of parallel robots using genetic algorithms
3. Control of industrial Fanuc robots
4. Design and development of Soft Robotics systems

The offer addressed to the economic environment

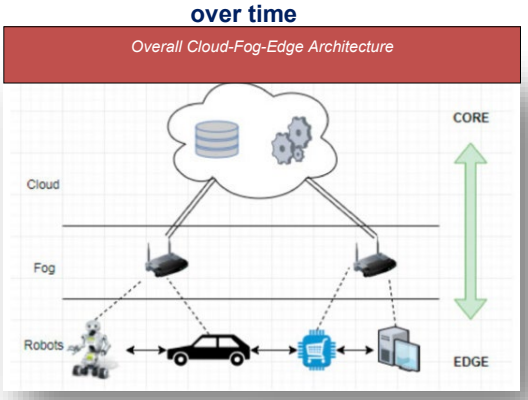
Research & development	Development of solutions for modelling mechatronic systems. Development of original algorithms for optimization with genetic algorithms of mechatronic systems. Development of solutions for control of CNC machines/ robot systems. Development of airborne OD&TID systems. Design, control and development of Soft Robotics systems.
Consulting	Consulting, design, research and prototyping of mechatronic systems, control of industrial Fanuc robots
Applied engineering services	Custom solutions for specific issues regarding the implementation of mechatronic systems
Training	**MATLAB programming**: getting started with Matlab, m-files, Graphical User Interfaces, Virtual Reality, Simulink/Simscape Toolbox..etc. **Optimal design with Genetic Algorithms**: optimization, genetic algorithms, Pareto optimal front, multicriteria optimization. **Arduino**: hardware, breadboards and prototyping, simple electronic components, Introduction to important programming concepts, software interface with MATLAB. **Quanser:** teaching platform for controls and mechatronics with MATLAB/Simulink **Fanuc robots:** hands-on robotics learning for the future of mechatronics and automation, teaching experience of programming and operating cutting-edge industrial Fanuc robots.

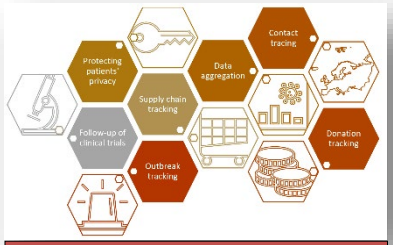
DEPENDABLE SYSTEMS

Contact details

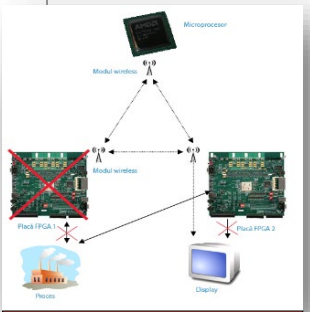
Name	Dependable Systems
Acronym	**DeSy**
Logo	DeSy
Site	http://desy.utcluj.ro
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Automation Department**
Telephone	+40 264 401427
Fax	+40 264 594835
Director	Prof. Eng. Liviu Miclea, PhD
E-mail	Liviu.Miclea@aut.utcluj.ro

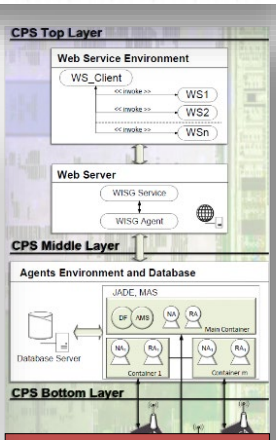
Block schemas elaborated by the DESY group, over time





Blockchain application cases in the fight against COVID-19


Dependability Through Hardware Reconfiguration



CPS 3 Layers Based Architecture

Areas of expertise

Dependability. Security ►Development of intelligent techniques for dependability (availability, reliability, safety, security, integrity and maintainability), security (confidentially) and testing of information systems; ►Analysis, design, implementation and testing of information systems with dependability properties used in various fields (e.g. critical infrastructure - energy, water, environment, transport; medicine). **Cyber – Physical Systems (CPSs** ►Development of **a**bstractions, models, architectures and tools to allow implementation of reliable CPSs (including areas as cloud- fog-edge architectures) made from unsafe components and resistant CPSs at cyber or physical attacks; ►Development of the semantic basics for heterogeneous models composition and for modelling languages that describe various physical processes of a CPS and their associated logic. **Intelligent Systems** ► Analyses, design, implementation and testing of intelligent real-time control and monitoring systems using artificial intelligence techniques (intelligent agents, fuzzy logic, machine learning, decision support systems, etc.).

Team

Prof. Dr. Eng. Liviu MICLEA, Prof. Dr. Eng. Honoriu VĂLEAN, Prof.dr.ing. Silviu FOLEA, Assoc. Prof. Dr. Eng. ENYEDI Szilard, Assoc. Prof. Eng. Ovidiu STAN, Lecturer Eng. Iulia ȘTEFAN, PhD, Lecturer. Eng. Dan GOTA, PhD, Assist. Eng. Adela POP, PhD, Assist. Eng. Alexandra FANCA, PhD► **PhD students:** Cosmina CORCHEȘ, Eng. Ionut Cătălin DONCA, Eng. Andrei-Mihai VĂDAN, Vlad BUCUR, Eng. Andrei SCURTU, Eng. Rareș COSTE, Tudor POP, Eng. Marius MISAROȘ.

Representative projects

The most representative projects in the last 10 years ►2018-2020 - **ROBIN – "Robots and Society: Cognitive Systems for Personal Robots and Autonomous Vehicles"**, PCCDI2018 ►2014-2017 - **F2S, "SCADA Federation, Collaborative Instrument for Water Management – Somes River Pilot Application"**, National PN2- Partnerships project, http://193.226.5.107/f2s/pagina/, ►2013-2016 - "**Use of commercial drones for autonomous maintenance services in railways**", cooperation with Siemens company►2014-2015 **- "Cluj-Napoca: Next Generation Brained City - Software design for service monitoring at the level of the medical network, through innovative solution integration"**, Sectoral Operational Programme "Increase of Economic Competitiveness" (POSCCE) project, http://clujit.ro/ro/#Next Generation Brained City, ►2013-2017 - **ProSEco, "Collaborative environment for design of AmI enhanced product-services integrating highly personalised innovative functions with minimal ecological footprint along life cycle and of their production processes based on collaborative environments"**, European FP7 project, http://cordis.europa.eu/projects/rcn/109191_en.html, ►2013-2014 - **CyCloSe, "Designing Cloud-based Self-**

healing Cyber-Physical Systems", Romania–Italy Bilateral Cooperation with Politecnico di Torino, ►2007-2010 - **DESP, "Electronic Healthcare Record"**, National PN2- Partnerships project, http://www.desp.ro/wiki/index.php/English.

Significant results

The most representative publications of the past 5 years ►Cosmina Corches, Mihai Daraban, Liviu Miclea, "**Availability of a RFID Object Identification System in IoT Environment**", Sensors, ISSN 1424-8220, special issue "Smart Sensors for Remotely Operated Robots", Vol 21, Issue 18, article number: 6226, DOI: 10.3390/s21186220, Published: SEP 2021, ►Harshita Patel, Dharmendra Singh Rajput, Ovidiu Petru Stan, Liviu Cristian Miclea, "**A New Fuzzy Adaptive Algorithm to Classify Imbalanced Data**", CMC-Computers, Materials & Continua, ISSN / eISSN: 1546-2218 / 1546-2226, Special Issue: Emerging Applications of Artificial Intelligence, Machine learning and Data Science, Vol.70, No.1, pp. 73-89, 2022, DOI:10.32604/cmc.2022.017114, Accepted: APR 2021►Cristina Muresan, Isabela Birs *, Eva Dulf, Dana Copot, Liviu Miclea, "**A Review of Recent Advances in Fractional Order Sensing and Filtering Techniques**", Sensors, ISSN 1424-8220, special issue: "Fractional Sensor Fusion and its Applications", vol. 21, Issue 17, article number: 5920, doi: 10.3390/s21175920, published SEP 2021►Stan, O.P.; Enyedi, S.; Corches, C.; Flonta, S.; Stefan, I.; Gota, D.; Miclea, L. "**Edge Environment"**, Sensors 2021, 21, 4714. ►Cosmina Corches, Mihai Daraban, Ovidiu Stan, Szilárd Enyedi, Liviu Miclea**, Interconnection of Systems with Cloud-Fog-Edge architectures: Concept and Challenges**, CONTROL ENGINEERING AND APPLIED INFORMATICS, vol 23, issue 1, pp.60-71, 2021►I. Ştefan, L. Miclea and H. Vălean, **"Towards Testing Considerations Of Experimental Decision Support System Design,"** 2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2020, pp. 1-6, doi: 10.1109/AQTR49680.2020.9129954, ►Gota, DI , Puscasiu, A, Fanca, A, Valean, H Miclea, L, **Human-Computer Interaction using hand gestures**, 2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 2020,pp. 195-199, ►Vlad Bucur, Ovidiu Stan, Liviu Miclea, „**Data Loss Prevention and Data Protection in Cloud Environments based on Authentication Tokens**", 2019 22nd International Conference on Control Systems and Computer Science (CSCS), Bucharest, Romania Date: May 28-30, 2019, pp. 720-725, DOI: 10.1109/CSCS.2019.00128►Ovidiu Stan, Liviu Miclea, „**New Era for Technology in Healthcare Powered by GDPR and Blockchain**", 6th International Conference on Advancements of Medicine and Health Care through Technology (MediTech), Cluj Napoca, ROMANIA, OCT 17-20, 2018, Book Series: IFMBE Proceedings, Volume: 71, Pages: 311-317, ►Stefan, Iulia; Enyedi, Szilard; Scurtu, Andrei; et al., **Using the WaterML Standard Information Model, in a SCADA Federation Web Service**, CONTROL ENGINEERING AND APPLIED INFORMATICS Volume: 20 Issue: 1 Pages: 119-127 Published: MAR 2018►Bucur, V., Dehelean, C., Miclea, L., „**Object storage in the cloud and multi-cloud: State of the art and the research challenges**", 2018 IEEE International Conference on Automation, Quality and Testing, Robotics, AQTR 2018 - THETA 21st Edition, Proceedings, pp. 1-6 ►T. Sanislav, G. Mois, and L. Miclea, **"An approach to model dependability of cyber-physical systems"**, *Microprocessors and Microsystems*, vol. 41, pp. 67-76, Mar 2016. ►T. Sanislav, G. Mois, L. Miclea, "**An Approach to Model Dependability of Cyber-Physical Systems**", *Microprocessors and Microsystems*, vol. 41, pp. 67-76, March 2016, ISSN: 0141-9331, DOI: 10.1016/j.micpro.2015.11.021 ► Silviu Folea, George Moiş, Cristina Muresan, Liviu Miclea, Robert De Keyser, Marcian Cirstea, **A Portable Implementation on Industrial Devices of a Predictive Controller Using Graphical Programming**, IEEE Transactions on Industrial Informatics, April 2016, Q1 AUTOMATION & CONTROL SYSTEMS)

Patents ► J. Figueras, L. Miclea, G. Moiş, "**Method for the dynamic voltage scaling in an arithmetic-logic unit based on on-line error detection**", no. OSIM: 130282/30.03.2018 ► L. Miclea, Szilard Enyedi, Iulia Stefan, Ovidiu Stan, Ioan Stoian, Dorina Capatina, Ovidiu Ghiran, Marius Matreata, Grigore Bolos, Radu Jucan, Zoltan Kope, Alin Moldovan, "**Method of interoperability of data from SCADA-type systems through the constitution of a federated structure**", no. OSIM A/10061/2017.

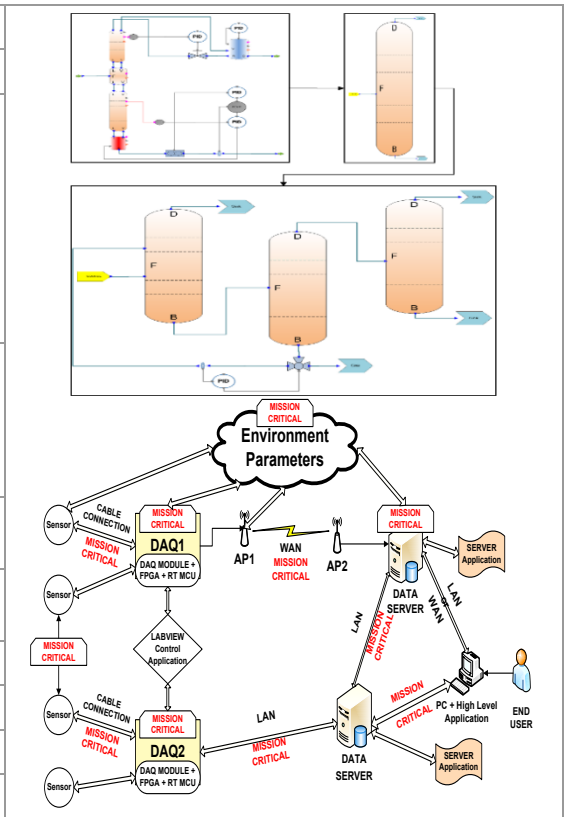
The offer addressed to the economic environment

Research & development	Abstractions definition, architectures design and tools implementation to achieve the development of highly dependable and secure CPSs; ►Expansion of artificial intelligence techniques in order to implement some modelling and control applications. ►Analysis, design, implementation and validation of dependable CPSs used in water resources management, electrical power generation and transport, cloud-fog-edge infrastructure; ►Analysis, design, implementation and validation of information systems applied in various fields; ►Application of artificial intelligence techniques in energy production, medicine, food quality control.
Consulting	Consulting, research, design, development of dependable information systems and intelligent systems for industrial and scientific environment.
Applied engineering services	Computer testing services ►Programming and software and hardware consultancy services ►Intelligent systems design and implementation services.
Training	**Dependable basics:** availability, reliability, safety, integrity and maintainability; ►**CPS basics:** hardware and software architecture, physical devices development and programming, decision support, historical databases design and management, historical data pre- and post-processing; ►**Software testing techniques**: functional testing, structural testing, use of software testing frameworks; ►**Artificial intelligence techniques:** intelligent agents, multi-agent systems, machine learning.

PROCESS AND ENERGY SYSTEMS ENGINEERING

Contact details

Name	**Process and Energy Systems Engineering**
Acronym	**PSE**
Logo	
Site	www.aut.utcluj.ro https://research.utcluj.ro/tl_files/research/Research%20Domain/Systems%20Engineering/PSE_Abrudean.pdf
Address	26-28 Gh. Bariţiu Str., 400027 Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Department of Automation**
Telephone	+40-264-202437
Fax	+40-264-599893
Director	Prof. Dr. Eng. Vlad Mureșan
e-mail	Vlad.Muresan@aut.utcluj.ro



Areas of expertise

Process modelling and simulation
- First principle modelling; Gray box modelling with partial derivative equations; Neural networks

Process control
- Plantwide control, Control strategies for unconventional processes (e.g. cryogenic separation units, heavy water production); Development of control algorithms for processes with distributed parameters; System identification technologies, Dedicated control solutions for: rotary hearth furnaces, blunting systems, rolling mills, piercers and storage tanks, Intelligent control; Fractional-order control

Energy systems
- Renewable energy systems; Nuclear power plants; Laser, plasma and electron irradiation processes; Steam power plants

Medical systems
- Pandemic dynamics; Respiratory system; Dental systems

Team

Prof. Dr. Eng. Mihail Abrudean, Prof. Dr. Eng. Tiberiu Colosi, Prof. Dr. Eng. Vlad Mureşan, Assoc. Prof. Dr. Eng. Ionuţ Muntean, Assoc. Prof. Dr. Eng. Iulia Clitan.

Representative projects

"Dynamics of SARS-CoV-2 virus transmission in Romania" - granted by UEFISCDI (no. 10Sol/2020). Project period: 2020 - 2021. The team structure: Coordinator: Technical University of Cluj-Napoca; P1 partner: "Alessandrescu-Rusescu" National Institute for Maternal and Child Health, Bucharest; P2 partner": Cluj-Napoca Infectious Diseases Clinical Hospital
"Embedded mode for advanced pressure control in protected spaces", PNIII-CI-2017
"Optimizing the length of steel bars according to the process of programming the production of tubular material and in relation to the production process in the steel works" internal project funded by TUCN (2016-2017)
"Stimulation of the return curve (metallographic process)", internal project funded by TUCN (2016-2017)
I3E, "Promoting Innovation in the Industrial Informatics and Embedded Systems Sectors through Networking", South East Europe Transnational Cooperation Programme (SEE), (2010-2012)
"Advanced metallurgical process control for the production of seamless steel tubes", BD-CNCSIS, (2008-2010)

Significant results

The most representative publications of the past 5 years:

1. Mureşan V, Abrudean M, „Conducerea proceselor industriale , Editura Galaxia Gutenberg, Cluj-Napoca 2017, 181 pagini, ISBN 978-973-141-699-1.

2. Tiberiu Coloși, Iulia Clitan, Mihaela Ligia Ungureșan,Vlad Mureșan, Mihail Abrudean - Posibile extinderi ale matricei derivatelor partiale a vectorului de stare, asociate unor categorii de ecuatii cu derivate partiale, Editura Galaxia Gutenberg, 2020, 49 pag., ISBN 978-973-141-878-0.
3. Vlad Mureşan, Mihail Abrudean, Mihaela-Ligia Ungureşan, Iulia Clitan, Tiberiu Coloşi, “Inteligent temperature control in an industrial furnace”, ICCAE conference, Sydney, Australia, 14-16 Februarue, 2020.
4. Vlad Mureşan, Iulia Clitan, Valentin Sita, Mihail Abrudean, Mihaela-Ligia Ungureşan, “^{18}O Isotope Separation Process Control”, Lecture Notes in Electrical Engineering book series (LNEE, volume 613), 26 Octombrie 2019.
5. Vlad Mureşan, Mihail Abrudean, “Fault Tolerant Control System of the Rotary Hearth Furnace Servicing Machines”, 2019 IEEE 22nd International Symposium on Design and Diagnostics of Electronic Circuits & Systems (DDECS), 24-26 Aprilie 2019, Cluj-Napoca, România.
6. Vlad Mureşan, Mihail Abrudean, Iulia Clitan, Mihaela-Ligia Ungureşan, Roxana Carmen Cordoş, Călin Ciprian Oțel, “Advanced Control System for the Rotary Hearth Furnace Servicing System”, IEEE 13th International Symposium on Applied Computational Intelligence and Informatics (SACI 2019), 29-31 Mai, 2019, Timişoara, România.
7. Iulia Clitan, Vlad Mureșan, Mihail Abrudean, Zoltan Kovendi, Eugen Ioan Gergely, “Discrete Modeling and Control of an Industrial Robot used in a Metallurgical Process” 15th International Conference on Engineering of Modern Electric Systems (ICEMES 2019), 13-14 Iunie, 2019, Oradea, România.
8. Mihail Abrudean, Mihaela-Ligia Ungureşan, Helga Silaghi, Vlad Mureşan, Adrian Codoban, “Experimental Identification of the ^{13}C Isotope Separation Process by Cryogenic Distillation on a Two Column Separation Cascade”, 15th Intern.l Conference on Engineering of Modern Electric Systems (ICEMES 2019), 13-14 2019, Oradea, România.
9. Vlad Mureşan, Daniel Moga, Dorin Petreuş, Mihail Abrudean, Nicoleta Stroia, Rozica Moga “Fault Tolerant Control System for Photovoltaic Panels Application”, 2019 IFAC Workshop on Control of Smart Grid and Renewable Energy Systems, 10-12 Iunie, 2019, Jeju, Coreea de Sud.
10. Iulia Clitan, Vlad Mureşan, Mihail Abrudean, Valentin Sita, “Discrete Model for the Movement of Industrial Manipulator Used in Hot Rolling Process”, The 14-th edition of the Simulation, Modeling and Optimization in the Fields of Aerospace, Robotics, Manufacturing Systems, Mechanical Engineering, Power Energy, Materials Technology and Neurorehabilitation - SLS&OPTIROB 2019,27iunie-1 Iulie 2019, Jupiter, Constanța, România.
11. Iulia Clitan, Vlad Muresan, Mihail Abrudean, Andrei Florin Clitan, Honoriu Vălean, Mihaela Ligia Ungureşan, “Comparison of Continuous and Discrete PI Control on Clamp Positioning of an Industrial Robot”, 2019 23rd International Conference on System Theory, Control and Computing (ICSTCC), 9-11 Oct. 2019, Sinaia, România.
12. Vlad Mureşan, Mihaela-Ligia Unguresan, Delia Gligor, Codruța Varodi, “Neural Modeling of Laviron Treatment for Coating of Electrodes with Mediator”, COATINGS, Vol.: 9, Issue 7, 2019, Article: Number 429, ISSN: 2079-6412, DOI: 10.3390/coatings9070429, WOS:000478656200029.
13. Muresan, Vlad; Abrudean, Mihail; Unguresan, Mihaela-Ligia; et al., Control of the Isotopic Exchange for O-18 Isotope Production 2018 IEEE 12TH SACI Pages: 389-394 Published: 2018
14. Unguresan, Mihaela-Ligia; Muresan, Vlad; Gligor, Delia; et al., Adsorption process of phenothiazine solution in dimethyl sulfoxide on graphite electrodes Journal of Solid State Electrochemistry Vol: 22 Issue: 8 Pages: 2305-2314 Published: AUG 2018
15. Muresan, Vlad; Moga, Daniel; Petreus, Dorin; et al., Fault Detection and Fault Tolerance Mechanism for DC/DC Converters in Microgrids 10th IFAC Symposium on Control of Power and Energy Systems (CPES) Location: Meiji Univ, Nakano Campus, Tokyo, JAPAN Date: SEP 04-06, 2018 IFAC PAPERSONLINE Volume: 51 Issue: 28 Pages: 666-671 Published: 2018

Significant solutions

First principle modelling library for distillation processes with non-ideal mixtures, Tuning algorithm for PID controllers for discrete-time systems with dead time, Gray box modelling platform, Control strategies for isotopic processes, Plantwide control strategies for distillation processes, Tuning algorithms for coupled PID controllers for performance improvement, Intelligent control solutions for industrial processes, Fractional-order control solutions for industrial processes, Methods for pandemic dynamics modelling.

Products and technologies:

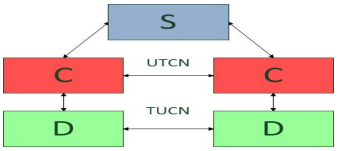
16. First principle modelling framework for distillation processes with non-ideal mixtures
17. General modelling and control framework using partial derivative equations
18. Robust PID tuning algorithm for discrete-time systems

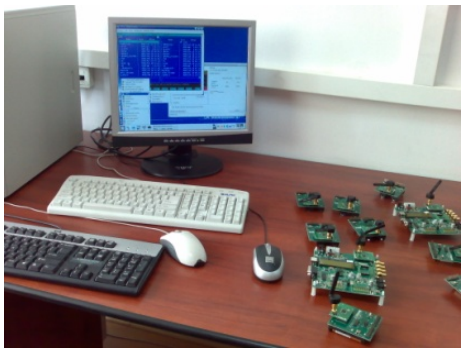
The offer addressed to the economic environment

Research & development	Development of open- and closed-loop identification solutions. Development of tailored solutions for the modelling, simulation and control of chemical and energy systems. Development of general first principle modelling libraries/frameworks for chemical and energy systems. Development of general control strategies for the chemical and energy sector. Development of optimal control strategies for renewable energy systems. Development of models for biomedical applications.
Consulting	System identification. Process modelling. Tuning of coupled controllers. Calculation of the economic potential of implementing advanced control strategies. Support for the implementation of our proposed technical solutions.
Training	**Systems theory:** identification methods, stability analysis, control loops, controllers. **Process control:** optimal control algorithms, plantwide control, PID tuning (discrete and continuous systems), control of unconventional processes, intelligent control, fractional-order control. **Electronics:** power and basic electronics.

DISTRIBUTED CONTROL SYSTEMS

Contact details

Name	**Distributed Control Systems**
Acronym	**DCS**
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Systems%20Engineering/4_Letia.pdf
Address	2, Observatorului St, room 310; 24, 26, Baritiu St., room G1, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Automation Department**
Telephone	+40 264 401432
Fax	
Director	Prof. Dr. Eng. Tiberiu Leţia
e-mail	Tiberiu.Letia@aut.utcluj.ro



Areas of expertise

Distributed control systems, embedded systems, real-time application, intelligent control etc.

Team

Prof. Dr. Eng. Tiberiu S. Letia, Prof. Dr. Eng. Adina Aştilean, Assist. Prof. Dr. Eng. Camelia Avram, Assist. Prof. Dr. Eng. Mihai Hulea, Assist. Prof. Dr. Eng. Radu Miron, Assist. Dr. Eng. Dan Radu, Assist. Dr. Eng. Maria-Magdalena Santa, Assist. Dr. ing. Octavian Cuibus

Representative projects

"Intelligent control system of road traffic", research topic in the Postdoctoral project: Development and support of multidisciplinary postdoctoral programs in major technical areas of national strategy of Research - Development - Innovation" 4D-POSTDOC, contract no. POSDRU/89/1.5/S/52603, project co-funded by the European Social Fund through Sectorial Operational Program Human Resources Development 2007-2013, (2010-2013).
I3E, "Promoting Innovation in the Industrial Informatics and Embedded Systems Sectors through Networking", Contract EU: SEE/A/219/1.1/X, http://www.i3e.eu/ (2009-2012)
"Identification system based on digital fingerprint with mobile terminals", PNII-PDP (Joint Applied Research Project) 11038/2007, (2007-2010)
"Real-Time intelligent system for management, control and information of railway traffic", Grant Cod CNCSIS: 1537/2007, (2007-2009)

Significant results

The most representative publications of the past 5 years:

1. D. Al-Janabi, T.S. Letia. Analysis of Applications Conceived by Object Enhanced Time Petri Nets. IEEE Conf. ICSTCC, Sinaia, 2019
2. M. F. Enache, T.S. Letia. Approaching the Railway Traffic Resilience with Object Enhanced Time Petri Nets, . IEEE Conf. ICSTCC, Sinaia, 2019
3. Kilyen, Attila O.; Letia, Tiberiu S., Interactive development of cyber physical systems using UETPN model, Federated Conference on Computer Science and Information Systems (FedCSIS) Location: Poznan, POLAND Date: SEP 09-12, 2018, Book Series: Federated Conference on Computer Science and Information Systems Pages: 1035-1042 Published: 2018
4. Enache, Mihai F.; Al-Janabi, Dahlia; Letia, Tiberiu S., Railway Modeling with Object Enhanced Time Petri Nets

Conference: 21st IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR THETA) Location: Cluj Napoca, ROMANIA Date: MAY 24-26, 2018
5. Letia, T. S.; Kilyen, A. O., Using Unified Enhanced Time Petri Net Models for Cyber-Physical System Development Conference: 9th Vienna International Conference on Mathematical Modelling (MATHMOD) Location: Vienna, AUSTRIA IFAC PAPERSONLINE Volume: 51 Issue: 2 Pages: 248-253 Published: 2018
6. Radu, Dan; Cretu, Adrian; Parrein, Benoit; Avram Camelia, Astilean Adina et al., Flying Ad Hoc Network for Emergency Applications Connected to a Fog System ADVANCES IN INTERNET, DATA & WEB TECHNOLOGIES Book Series: Lecture Notes on Data Engineering and Communications Technologies Volume: 17 Pages: 675-686 Published: 2018
7. Avram, Camelia; Miron, Radu; Radu, Dan; et al., Two-phase authentication and encryption algorithm for mobile users 2018 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR) Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
8. Radu, Dan; Cretu, Adrian; Avram, Camelia; et al., Video Content Transmission in a Public Safety System Model based on Flying Ad-Hoc Networks 2018 IEEE INTERNATIONAL CONFERENCE ON AUTOMATION, QUALITY AND TESTING, ROBOTICS (AQTR) Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
9. Avram, Camelia; Astilean, Adina; Valente, Eduardo, Timed Cellular Automata-Based Tool for the Analysis of Urban Road Traffic Models MECHATRONICS FOR CULTURAL HERITAGE AND CIVIL ENGINEERING Book Series: Intelligent Systems Control and Automation Science and Engineering Volume: 92 Pages: 35-61 Published: 2018
10. Silva, Jose Reinaldo; Silva, Javier Martinez; Pereira, Celina; Avram Camelia et al., New Trends in Residential Automation MECHATRONICS FOR CULTURAL HERITAGE AND CIVIL ENGINEERING Book Series: Intelligent Systems Control and Automation Science and Engineering Volume: 92 Pages: 137-157 Published: 2018
11. Florian, Horatiu; Mocanu, Adrian; Vlasin, Cristian; Camelia Avram, Adina Astilean et al., Deaf people feeling music rhythm by using a sensing and actuating device SENSORS AND ACTUATORS A-PHYSICAL Volume: 267 Pages: 431-442 Published: NOV 1 2017
12. Letia, Tiberiu S.; Kilyen, Attila O., Unified Enhanced Time Petri Net Models for Development of the Reactive Applications Conference: 3rd International Conference on Event-Based Control, Communication and Signal Processing (EBCCSP) Location: Funchal, PORTUGAL Date: MAY 24-26, 2017

Significant solutions:
Control and monitoring system for urban vehicle traffic
Control and monitoring system for railway traffic
Control systems for Flexible Manufacturing Systems
Distributed control for hybrid processes.
Design, verification and implementation real-time (embedded) applications.
Person identification based on digital fingerprint.

The offer addressed to the economic environment

Research & development	Automatic synthesis of control and monitoring systems for discrete event or hybrid, concentrated or distributed processes. Verification of real-time applications.
Consulting	Embedded systems, real-time application design, implementation and verification. Distributed control systems for urban vehicle traffic or railway traffic.
Training	Design and implementation of real-time application, Design and implementation of distribute control application Distributed control of Transportation systems.

RAPID PROTOTYPING DESIGN IN CONTROL SYSTEMS

Contact details

Name	**Rapid Prototyping Design in Control Systems**
Acronym	**RADECO**
Logo	RADECO
Site	http://users.utcluj.ro/~dobra/RADECO.php
Address	26-28, G. Baritiu Str., room G2, 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Department of Automation**
Telephone	Automation Department
Fax	+40 264 401433
Director	Prof. Dr. Eng. Petru Dobra
e-mail	Petru.Dobra@aut.utcluj.ro

Areas of expertise

Digital Control of electrical drives for CNC machines.
Electrical drives for industrial robots.
Equipment Setup for building automation;
Embedded systems for intelligent environment.

Team

Prof. Dr. Eng. Petru Dobra, Assist. Drd. Eng. Mircea Şuşcă, Assist. Drd. Eng. Dora Laura Morar, Assist. Prof. Dr. Eng. Mirela Dobra, Drd. Eng. Vlad Mihaly, Dr. Eng. Marius Costandin, Dr. Eng. Vasile Boancă

Representative projects

"The platform embedded for controlling a solar thermal cooling system suitable for small / medium scale cooling applications", 2014-2015, internal research project financed by TUCN
VISICOM, "Vision Bases Systems for Intelligent Control and Monitoring", CEEX NR.X2C21/18.07.2006
"Research on sensors technology and design algorithms for signal processing", Research Contract nr.22520/30.11.2005 UTC-N – MultiPRO Amsterdam, (2005-2006)
RADEPA, "Rapid development of prototyping for actuators systems", CNCSIS 1257/2005
"PLC equipment for fault detection and isolation in electrical drives and sensors systems", Research Grant CNCSIS tip E, nr. 108/2004
"H∞ techniques for fault detection and isolation in electrical drives and sensors systems", research grant CNCSIS AT 230/2001 & 48/2003

Significant results

The most representative publications of the past 5 years:

1. Costandin, Marius, and Petru Dobra. "Polynomial trajectory generation and tracking for linear systems." International Journal of Control (2019): 1-10.
2. Mihaly, Vlad, Mircea Susca, and Petru Dobra. "Passivity-Based Controller for Nonideal DC-to-DC Boost Converter." 2019 22nd International Conference on Control Systems and Computer Science (CSCS). IEEE, 2019.
3. Fratean, Adrian; Dobra, Petru, Control strategies for decreasing energy costs and increasing self-consumption in nearly zero-energy buildings SUSTAINABLE CITIES AND SOCIETY Volume: 39 Pages: 459-475 Published: MAY 2018
4. Costandin, Marius; Costandin, Beniamin; Dobra, Petru, Nonlinear Model and Trajectory Control of A Novel VTOL Vehicle II Conference: INTERNATIONAL CONFERENCE ON UNMANNED AIRCRAFT SYSTEMS (ICUAS) Location: Dallas, TX Date: JUN 12-15, 2018 Book Series: International Conference on Unmanned Aircraft Systems Pages: 806-815 Published: 2018

5. Costandin, Marius; Dobra, Petru, Derivation of Nonlinear Mathematical Model of Two-Wheeled Inverted Pendulum 2017 21ST INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) Book Series: International Conference on System Theory Control and Computing Pages: 94-99 Published: 2017
6. Rusu, Andrei; Dobra, Petru, The implementation of an ARM-based low-power wireless process control system 2017 21ST INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) Book Series: International Conference on System Theory Control and Computing Pages: 666-670 Published: 2017
7. Fratean, Adrian; Dobra, Petru; Carutasiu, Mihail-Bogdan, Dynamic temperature setpoint control as a strategy for reducing costs and energy consumption in nearly zero-energy buildings 2017 21ST INTERNATIONAL CONFERENCE ON SYSTEM THEORY, CONTROL AND COMPUTING (ICSTCC) Book Series: International Conference on System Theory Control and Computing Pages: 677-682 Published: 2017
8. Sita Ioan-Valentin, Dobra Petru, Moga Daniel, et al., "Optimization of Residential Heating Systems Using Accumulators", IEEE 15th International Conference on Environment and Electrical Engineering (EEEIC),
9. Rome, ITALY, JUN 10-13, 2015, Pp. 2165-2170, Published: 2015
10. D. Moga, I. Sita, N. Stroia, P. Dobra, R. Moga, D. Petreus, "Sensing and Control Strategies in Tracking Solar Systems", 20th International Conference on System Controls and Computer Science 2015, Bucharest, ROMANIA, Vol.2, pag. 989-995, 2015.

Significant solutions:

Golden Medal, Innova, Brusselles, 2011, "Automatic system for the analysis of electrical energy quality", Radu Munteanu, Petru Dobra, Daniel Moga, Radu Adrian, Munteanu,Mihai Stelian Munteanu,Mirela Truşcă, Dorin Petreuş,Valentin Sita

The offer addressed to the economic environment

Research & development	**Digital control system development for electrical drives with BLDC and PMSM motors** - implementation of EPLAN and Autocad Electrical projects; - ladder and C++ programming; - implementation of SCADA graphical interfaces; - control algorithms in Matlab, Labview; **Upgrade, replacement or retrofitting electrical drives for** - medium CNC machines - industrial robots with DC / Stepper / BLDC/ PMSM motors - configuring PLC's (Siemens, Omron). **Equipment Setup for building automation;** - PLC based automation systems; - energy resources management; - using KNX and LOGO! Controllers.
Consulting	Microcontrollers/PLC/ FPGA programing environments, data acquisition procedures Programming in C, C++, PHP, Java, Matlab; Home Automation Configuring (KNX and LOGO! Controllers)
Training	Implementing Embedded Control Systems for: - electrical drives (DC motors, BLDC motors, PMSM motors) - inteligente sensors systems (temperature, humidity, pressure) - home automation (KNX and LOGO! Controllers)

INDUSTRIAL PROCESSES CONTROL SYSTEMS AND INSTRUMENTATION

Contact details

Name	**Industrial Processes Control Systems and Instrumentation**
Acronym	**IPCSI**
Logo	
Site	https://research.utcluj.ro/tl_files/research/Research%20Domain/Systems%20Engineering/IPCSI_Nascu.pdf
Address	2 Observatorului Street, lab. 301, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Automation Department**
Telephone	+40-264-401 819
Fax	+40-264-401 220
Director	Prof. Dr. Eng. Ioan Nascu
e-mail	ioan.nascu@aut.utcluj.ro

Wastewater Treatment Plant Monitoring and Control

Control of the **dissolved oxygen** concentration in a wastewater treatment plant

Areas of expertise

Industrial processes control systems.
Performance evaluation of industrial processes, design, implementation and analysis of automatic systems for the control of process parameters.
Advanced automatic control strategies: advanced control structures, advanced control algorithms.
Embeddedsystems-microcontrollers, data acquisition interfaces, industrial communications.

Team

Prof. Dr. Eng. Ioan Nascu
Assist. Prof.Dr. Eng. Ruben Crisan, Assist. Dr. Eng. Tudor Buzdugan, Sl. Dr. Eng. Gabriel Harja, Sl. Dr. Eng. Ioana Nascu
Assist. Dr. Eng.Isabela Birs, PhD students: Assist. Drd. Eng. Mihai Stanese, Drd. Eng.Raul Prodan, Drd. Eng. Vasile Dan

Representative projects

SOMCEB - Development and validation of a multi-variable control system for the biological stage of wastewater treatment plants, PN-III-P2-2.1-CI-2018-1212, https://somceb.wixsite.com/proiect
SMEOPA -System for monitoring the efficiency and optimizing the aeration process for activated sludge wastewater treatment plants, PN-III-P2-2.1-CI-2017-0202, https://smeopa2.wixsite.com/proiect
CASEAU - "Strategii de conducere bazate pe tehnici de control avansat pentru optimizarea performantelor statiilor de epurare a apelor uzate si reducerea consumurilor energetice", PCCA 2013, Contract no. 274/2014, Caseau.wix.com/proiect
MULTIBAR, "Automatic modules for drinkable water using advanced oxidation processes and biofilter (multiple barriers)", PNII Innovation, 12DPST/20.08.2013, http://www.icpebn.ro/site_ro/cercetare/multibar/index.html (2013-2016)
TEHNOPUR, "Obtaining ultrapure water plant from primary sources", 2008-2010, INNOVATION Contract no. 177/2008, http://www.icpebn.ro/site_ro/cercetare/tehnopur/index.html (2008-2010)

Significant results

The most representative publications of the past 5 years:

1. Isabela Birs, Cristina Muresan, Dana Copot, Ioan Nascu, Clara Ionescu, Event-based fractional order control, Journal of Advanced Research, Volume 25, September 2020, Pages 191-203, https://doi.org/10.1016/j.jare.2020.06.024
2. Isabela Birs, Cristina Muresan, Dana Copot, Ioan Nascu, Clara Ionescu, Identification For Control Of Suspended Objects In Non-Newtonian Fluids, Fractional Calculus and Applied Analysis, Volume 22, Number 5 (2020), ISSN(Print) 1311-0454, (Electronic)ISSN 1314-2224,
3. Isabela Roxana Birs, Cristina Muresan, Ioan Nascu, Clara Ionescu, A Survey of Recent Advances in Fractional Order Control for Time Delay Systems, IEEE Access PP(99):1-1, March 2019, DOI: 10.1109/ACCESS.2019.2902567
4. Ioan Naşcu, Hierarchical predictive control of Wastewater Treatment Plants, MATEC Web of Conferences, Vol 210, art.no.02002 (2018)
5. Crisan, Ruben; Harja, Gabriel; Nascu, Ioan; et al., Hierarchical Control System for Energy Savings in Wastewater Treatment Plant, 21st IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR THETA) Location: Cluj Napoca, ROMANIA Date: MAY 24-26, 2018 Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
6. Dragan, Paul; Stanese, Mihai; Nascu, Ioan, Camera-based liquid level measurement using the refractive properties of the medium, 21st IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR THETA) Location: Cluj Napoca, ROMANIA Date: MAY 24-26, 2018 Book Series: IEEE International Conference on Automation Quality and Testing Robotics Published: 2018
7. Muresan, Cristina I.; Nascu, Ioan; Dulf, Eva H., Design and Dynamics Analysis of a Fractional Order IMC Controller for a Waste Water Treatment Plant PROCEEDINGS OF THE 2017 12TH IEEE CONFERENCE ON INDUSTRIAL ELECTRONICS AND APPLICATIONS (ICIEA) Book Series: IEEE Conference on Industrial Electronics and Applications Pages: 693-698 Published: 2017
8. G. Harja, I. Nascu, C. Muresan, and I. Nascu, "Improvements in Dissolved Oxygen Control of an Activated Sludge Wastewater Treatment Process", *Circuits Systems and Signal Processing*, vol. 35, pp. 2259-2281, Jun 2016.
9. I. Nascu, G. Harja, "MPC advanced control of dissolved oxygen in an activated sludge wastewater treatment plant", *2016 IEEE International Conference on Automation, Quality and Testing, Robotics* (AQTR), Vol.1, pp. 269-274, 2016.
10. I. Nascu, N. Ioana, "Modelling and optimization of an activated sludge wastewater treatment process", *Computer Aided Chemical Engineering,* Vol.38, pp.1159-1164, 2016.
11. Crisan R., Nascu I., De Keyser R., Volcke E., "EPSAC for wastewater treatment process", (BSM1). *17th International Conference on System Theory, Control and Computing (ICSTCC)*, 14-19.Oct. 2015, Cheile Gradistei, Pages: 403 - 408, DOI: 10.1109/ICSTCC.2015.7321327, IEEE Catalog Number: CFP1536P-ART.

Patents:
"Parameters scheduling method for PID controllers", no. VI/112, September, 30, 2013

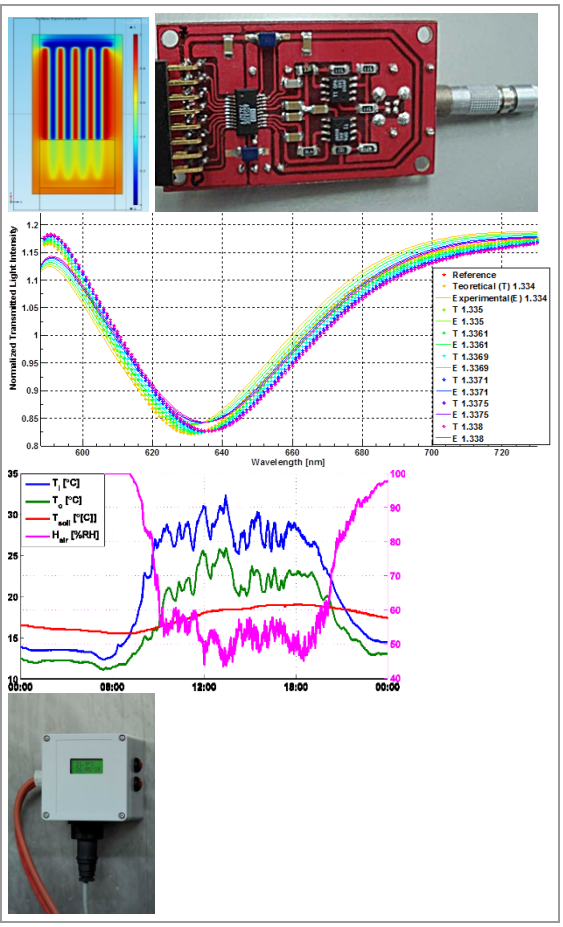
The offer addressed to the economic environment

Research & development	Modeling and simulation of processes with applications especially in chemical and biochemical processes. Advanced control strategies in biochemical processes. Advanced control strategies with applications in medicine.
Consulting	Evaluation and optimization of automatic control systems. Implementation of control systems using advanced control strategies
Training	Industrial process control systems. Complex industrial processes modeling and simulation. Sensors and instrumentation. PLC configuration and programming. Advanced control algorithms (model based predictive control, adaptive control).

ADVANCED SENSING TECHNOLOGIES GROUP

Contact details

Name	**Advanced Sensing Technologies Group**
Acronym	**GAST**
Logo	
Site	www.gast.utcluj.ro
Address	2, Observatorului Street, 5th Floor, Room 505, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Automation Department**
Telephone	+40 726 362 327
Director	Prof. Dr. Eng. Daniel Moga
e-mail	Daniel.Moga@aut.utcluj.ro



Areas of expertise

Smart sensors
-Simulation and design of optical sensors, MEMS based sensors, capacitive sensors, weather instruments
Wired and wireless sensor networks
-Ultra low power wireless sensors; Environmental monitoring with sensor networks; Multipoint wired networks
Hardware/software codesign for distributed control on embedded platforms
-Smart actuators; Fault tolerant control networks; Embedded servers and HMIs
Embedded hardware design for medical devices
- Innovative immunosensors; Monitoring in post-traumatic rehabilitation; Hyperthermic chemotherapy systems; Magnetic therapy equipment
Vision based monitoring and control
-Vision based automation systems for: quality control, automation in food industry, monitoring in agriculture

Team

Prof. Dr. Eng. Daniel Moga, Prof. Dr. Eng. Dorin Petreus, Prof. Dr. Mat. Mircea Ivan, Prof. Dr. Mat. Ion Gavrea, Prof.Dr. Ion Aurel Mironiuc, Dr. Corneliu Lungoci, Dr. Traian Oniu, Assoc. Prof. Dr. Eng. Mihai Stelian Munteanu, Assoc. Prof. Dr. Eng. Ramona Galatus, Assoc. Prof. Dr. Eng. Vlad Muresan, Assoc. Prof. Dr. Mat. Bogdan Gavrea, Assoc. Prof. Dr. Eng. Eugen Vitan, Dr. Mat. Rozica Moga, Dr. Eng. Iulia Clitan, Dr. Eng. Nicoleta Stroia, Phd. Student Eng. Zsolt Barabas

Representative projects

"Hypertermic Intra-Peritoneal Chemotherapy Equipment based on Cyber-Physical System Paradigm" Project no. PN-II-RU-TE-357/01.10.2015, funded by the Romanian Ministry of Education and Research, UEFISCDI, (2015-2017), http://hiper-cps.hpm.ro/
HydroSens – "Integrated Smart Sensor System for Monitoring of Strategic Hydrotechnical Structures", PN-II-PT-PCCA-2011-nr.71, http://hydrosens.hpm.ro (2012-2016)
Algorithms and methods for optical signal processing (2011-2014)
Medical equipment for magnetic therapy with low frequency pulsed magnetic field - ATM41, PN2, 2012
Complex architecture for monitoring and transfer of medical data. CNCSIS 1019, (2008-2010)
Research on Test Compression and LBIST, Research contract UTCN-Philips Semiconductors, (2005-2008)
Vision based systems for monitoring and intelligent control, X2C21/ 18.07.06, (2006-2008)

Significant results

The most representative publications of the past 5 years:

1. Muresan, Vlad; Moga, Daniel; Petreus, Dorin; et al., Fault Detection and Fault Tolerance Mechanism for DC/DC Converters in Microgrids 10th IFAC Symposium on Control of Power and Energy Systems (CPES) Location: Meiji Univ, Nakano Campus, Tokyo, JAPAN Date: SEP 04-06, 2018 IFAC PAPERSONLINE Volume: 51 Issue: 28 Pages: 666-671 Published: 2018
2. Rusu, Cristian-Bogdan; Lungoci, Corneliu; Moga, Daniel; et al., Modelling a Temperature Calibration System for Medical Probes 21st International Conference on Control Systems and Computer Science (CSCS) Location: Univ Politehnica Bucharest, Bucharest, ROMANIA Date: MAY 29-31, 2017 Pages: 26-33 Published: 2017
3. D. Moga, D. Petreus, N. Stroia, „Web based solution for remote monitoring of an islanded microgrid", *The 42nd Annual Conference of IEEE Industrial Electronics Society (IEEE IECON 2016)*, Florence, Italy, pp. 125-130, 2016.
4. Moga, Daniel; Petreus, Dorin; Muresan, Vlad; et al., Optimal generation scheduling in islanded microgrids IFAC Workshop on Control of Transmission and Distribution Smart Grids (CTDSG) Location: Prague, CZECH REPUBLIC Date: OCT 11-13, 2016 Volume: 49 Issue: 27 Pages: 135-139 Published: 2016
5. Moga, Daniel; Petreus, Dorin; Stroia, Nicoleta, Web based solution for remote monitoring of an islanded microgrid PROCEEDINGS OF THE IECON 2016 - 42ND ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY Book Series: IEEE Industrial Electronics Society Pages: 4258-4262 Published: 2016
6. C. Lungoci, D. Moga, V. Muresan, D. Petreus, N. Stroia, R. Moga, M. Munteanu, I. Raus, V. Muntean, A. I. Mironiuc."Hyperthermic Intraperitoneal Chemotherapy Approach Based on Cyber-Physical System Paradigm", *Journal of Control Engineering and Applied Informatics*, vol 17, no 3, pp. 50-59, 2015.
7. R. Etz, D. Petreus, T. Frentiu, T. Patarau, C. Orian, "An Indirect Method and Equipment for Temperature Monitoring and Control", *Advances in Electrical and Computer Engineering*, vol.15, no.4, pp.87-94, 2015, doi:10.4316/AECE.2015.04012
8. Juan A. Vallés and R. Gălăţuş, "Requirements for gain/oscillation in Yb3+/Er3+-codoped microring resonators", *Proc. SPIE 9359, Optical Components and Materials XII, 93591R (March 16, 2015)*; doi:10.1117/12.2078657; http://dx.doi.org/10.1117/12.2078657
9. C. Cristea, A. Florea, R. Galatus, E. Bodoki, R. Sandulescu, D. Moga, and D. Petreus, **"**Innovative immunosensors for early stage cancer diagnosis and therapy monitoring", in *The International Conference on Health Informatics (Y.-T. Zhang, ed.)*, vol. 42 of IFMBE Proceedings, pp. 47-50, 2014, *Springer International Publishing*.

Significant solutions:

Low cost hardware platforms for distributed sensing; Web based monitoring software for ARM platforms; Cross platform SCADA libraries; Ultra low power 8 bit embedded platform for wireless applications; Distributed control platform for building automation; Vision based mass and volume estimation for real time measurement of moving objects; CT medical image processing for computer assisted surgery

Products and technologies:

1.Distributed sensing and control platform (embedded and PC) with applications deployed in: industrial systems health monitoring, greenhouse automation, building automation
2. Smart communications hub for sensor networks, allowing data logging, processing, bridging, storing and streaming and html browser-based visualization for multiple wired/wireless sensing devices
4. Soil humidity sensors with wired/wireless interfaces
5. Weather sensors with Modbus interface
6. Condition monitoring systems for industrial machines and equipment
7. Internet based embedded platform for condition-based maintenance support
8. Vision-based equipment for high speed sorting in food industry
9. Integrated equipment for remote control and monitoring of greenhouse fields
10. Wireless system for monitoring and control of the progressive loading of lower limb in post-traumatic rehabilitation

Patents:

1. OSIM 123261 - **System for Monitoring the Progressive Loading of Lower Limb in Post-Traumatic Rehabilitation**, 2011
2. OSIM 122976 - **System and Process for Indirectly Measuring Mass of Objects in Motion**, 2010
3. OSIM 122986 - **Contactless Coupling Circuit**, 2010
4. OSIM 122380- **Method and Device for Measuring Rotational Speed in Highly Disturbing Media**, 2009
5. OSIM 123490 - **Wireless System for Remote Tilt Measurement**, 2012

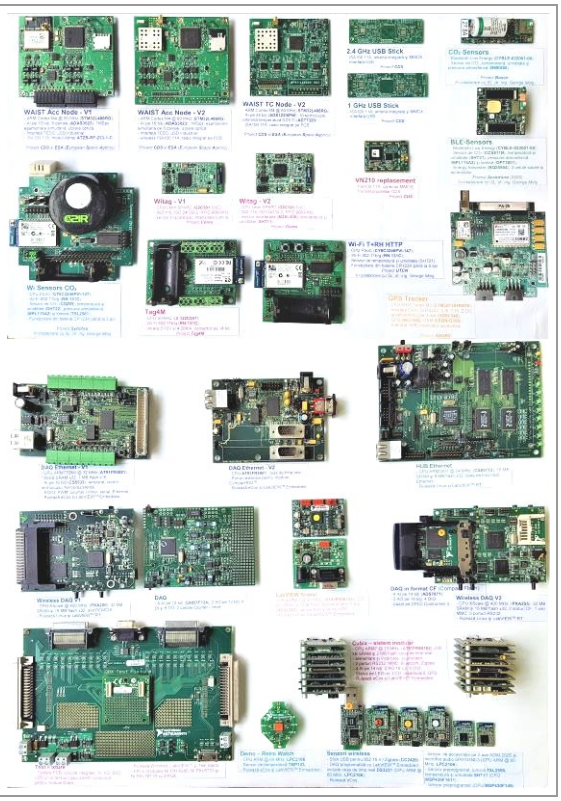
The offer addressed to companies

Research & development	Development of analytical and numerical models for sensor devices. Identification and calibration of measurement system models. Development of algorithms for sensor fault identification and isolation in control networks. Optimization of advanced digital signal processing algorithms for embedded platforms. Development of real-time measurement systems for vision based inspection and sorting. Development of real-time medical signal processing libraries.
Consulting	Consulting, design, research and prototyping in advanced sensing systems for remote monitoring Custom integrated hardware and software solutions for specific distributed control application Simulation and design of smart sensor for medical applications

WIRELESS SENSOR APPLICATIONS

Contact details

Name	**Wireless Sensor Applications**
Acronym	**WS-App**
Logo	WS-App
Site	http://users.utcluj.ro/~sfolea/ https://eeris.eu/ERIF-2000-000W-0867 https://scholar.google.ro/citations?user=nQaILkAAAAAJ&hl=ro
Address	Observator St., No. 2, 3rd Floor, Room 301, 400489
Faculty Department	**Faculty of Automation and Computer Science** **Department of Automation**
Telephone	+40 264 401819
Fax	+40 264 599893
Director	Prof. Dr. Eng. Silviu Folea
e-mail	silviu.folea@aut.utcluj.ro



Areas of expertise

Embedded system design
- The design and development of embedded systems based on microcontrollers, having sensor measuring and transmission capabilities: Wi-Fi, BLE or LoRa; Power harvesting.

Advanced process control
- The development of advanced control systems on industrial real-time platforms which include FPGA chips; LabVIEW™ graphical programming.

Team

Prof. Dr. Eng. Silviu Folea, Asoc. Prof. Dr. Eng. George Moiș, Assist. Prof. Dr. Eng. Teodora Sanislav, Assist. Prof. Dr. Eng. Mihai Hulea, PhD Student Eng. Ionuţ Dobra, PhD Student Eng. Vlăduţ Dobra.

Representative projects

"Thermal printer, bluetooth low energy and microSD data logger", Contract no. 65CI/2017, PN III (2017).
"Evaluation of Power Harvesting Elements in Wireless Sensors", Contract no. 1998/12.07.2017, TUCN internal grant.
"Sub 1 GHz ISA100 technology for low cost and low power consumption embedded systems", TETRACOM – 3rd Call for TTP Proposals (FP7), Partial Funding for Academia-Industry Technology Transfer Projects in Computing Systems, Technology Transfer in Computing Systems, no. 609491/2016.
"Power Harvesting Ambient Beacon for the IoT", Accenture Industrial Software Solutions (AISS), Grant - Industrial Internet of Things (IIoT), no. 8678/2016.
"WAIST: Wireless Applications for Satellite Assembly Integration and Testing Applications", nr. 4000108133, Control Data Systems SRL (CDS) and Thales Alenia Space France (TAS-F), contract with European Space Agency (ESA) no. AO7169, (2015-2016).

Significant results

The most representative publications of the past 5 years:

1. T. Sanislav, G. D. Mois, S. Zeadally and S. C. Folea, "Energy Harvesting Techniques for Internet of Things (IoT)," in *IEEE Access*, vol. 9, pp. 39530-39549, 2021, doi: 10.1109/ACCESS.2021.3064066.
2. G. Moiş, H. Hedeşiu, S. Folea (2020), "*Digital Design Laboratory using LabVIEW*", Mediamira, Cluj-Napoca, ISBN 978-973-713-353-3.
3. T. Santejudean, S. Folea and G. Mois, "Analysis of Low-Power Operation for an Environmental Monitoring Beacon," *2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR)*, 2020, pp. 1-5, doi: 10.1109/AQTR49680.2020.9129917.

4. R. Miron, M. Hulea and S. Folea, "Food Allergens Monitoring System Backed-up by Blockchain Technology," *2020 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR)*, 2020, pp. 1-4, doi: 10.1109/AQTR49680.2020.9130006.
5. S.C. Folea, G.D. Mois, "Lessons Learned from the Development of Wireless Environmental Sensors," in *IEEE Transactions on Instrumentation and Measurement*, vol. , pp. 1-1, DOI: 10.1109/TIM.2019.2938137, 28 Aug 2019.
6. T. Sanislav, S. Zeadally, G.D. Mois, S.C. Folea, "Wireless energy harvesting: Empirical results and practical considerations for Internet of Things," in *Journal of Network and Computer Applications*, vol. 121, pp. 149-158, ISSN 1084-8045, https://doi.org/10.1016/j.jnca.2018.08.002, 2018.
7. G.D. Mois, T. Sanislav, S.C. Folea, S. Zeadally, "Performance Evaluation of Energy-Autonomous Sensors Using Power-Harvesting Beacons for Environmental Monitoring in Internet of Things (IoT)," *Sensors*, Vol. 18, Issue: 6, Article Number: 1709, doi:10.3390/s18061709, http://www.mdpi.com/1424-8220/18/6/1709.
8. G. Mois, S. C. Folea and T. Sanislav, "Analysis of Three IoT-Based Wireless Sensors for Environmental Monitoring," in *IEEE Transactions on Instrumentation and Measurement*, vol. 66, Issue: 8, Pages: 2056-2064, Aug 2017.
9. G. Mois, Z. Szilagyi, T. Sanislav and S. Folea, "An HTTP-based environmental monitoring system using power harvesting," *2017 21st International Conference on System Theory, Control and Computing (ICSTCC)*, 2017, pp. 845-848, doi: 10.1109/ICSTCC.2017.8107142.
10. C. Avram, S. Folea, D. Radu, A. Astilean, "Wireless radiation monitoring system", *Proceedings - 31st European Conference on Modelling and Simulation*, ECMS 2017, pg. 416-422, Budapesta, 2017, Proceedings Paper.
11. G. Mois, T. Sanislav and S. C. Folea, "A Cyber-Physical System for Environmental Monitoring," in *IEEE Transactions on Instrumentation and Measurement*, vol. 65, no. 6, pp. 1463-1471, June 2016.
12. G. Mois, S. Folea, T. Sanislav and L. Miclea, "A low-power PSoC-based environmental monitoring system," *2016 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR)*, 2016, pp. 1-4, doi: 10.1109/AQTR.2016.7501295.
13. S. Folea, G. Moiş, C. I. Muresan, L. Miclea, R. De Keyser and M. N. Cirstea, "A Portable Implementation on Industrial Devices of a Predictive Controller Using Graphical Programming," in *IEEE Transactions on Industrial Informatics*, vol. 12, no. 2, pp. 736-744, April 2016.
14. S. Folea, C. I. Muresan, R. De Keyser and C. M. Ionescu, "Theoretical Analysis and Experimental Validation of a Simplified Fractional Order Controller for a Magnetic Levitation System," in *IEEE Transactions on Control Systems Technology*, vol. 24, no. 2, pp. 756-763, March 2016.
15. Folea, S.C.; Mois, G., "A Low-Power Wireless Sensor for Online Ambient Monitoring," *IEEE Sensors Journal*, vol.15, no.2, pp.742,749, Feb. 2015, doi: 10.1109/JSEN.2014.2351420.
16. T. Sanislav, G. Moiș, S. Folea, L. Miclea (2015), „*Integrating Wireless Sensor Networks and Cyber Physical Systems: Challenges and Opportunities*", Book title „Cyber-Physical System Design with Sensor Networking Technologies", Sherali Zeadally, Nafaa Jabeur, publisher The Institution of Engineering and Technology, ISBN: 978-1849198240.
17. M. Hulea, G. Mois, S. Folea, L. Miclea and V. Biscu, "Wi-sensors: A low power Wi-Fi solution for temperature and humidity measurement," *IECON 2013 - 39th Annual Conference of the IEEE Industrial Electronics Society*, 2013, pp. 4011-4015, doi: 10.1109/IECON.2013.6699777.

Significant solutions:
Wireless sensors based on Wi-Fi Low Power, BLE (Bluetooth Low Energy) or LoRA.
Development and implementation of advanced control methods on dedicated industrial systems.

Products and technologies:
Electronic equipment design, dedicated solutions. Hardware and software implementation.

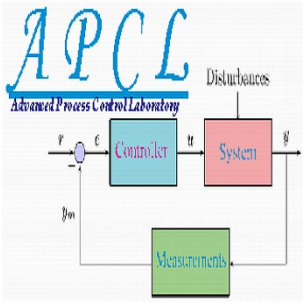
Patents:
1. A. Aştilean, T. Leţia, S. Folea, C. Avram, M. Hulea, R. Miron, E. Ciupan, „*Secured System and Method of Communication Between Fixed and Mobile Devices*", Brevet RO 127706 A2, nr. UTC-N 1000003415.
2. M. Ghercioiu, H. Hedesiu, S. Folea, G. Crisan, C. Ceteras, I. Monoses, "*Compact modular embedded device*", United States Patent 7860582B2, 12/28/2010
3. M. Ghercioiu, H. Hedesiu, S. Folea, G. Crisan, C. Ceteras, I. Monoses, "*Deployment and execution of a graphical program on an embedded device from a PDA*", United States Patent 7647562B2, 01/12/2010

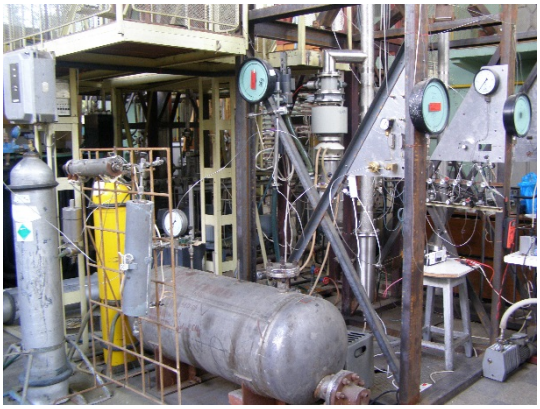
The offer addressed to the economic environment

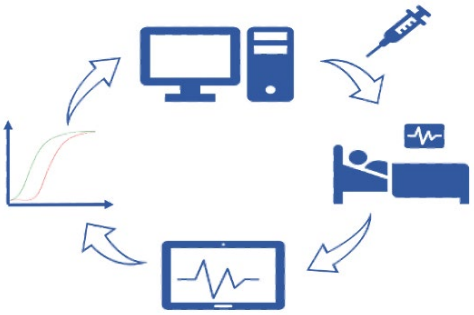
Research & development	The development of hardware equipment and of software products for new structures of data acquisition and communication. The design of dedicated measurement and wireless communication equipment and of location tracking equipment in open air using GPS or in industrial halls and office buildings using other technologies. The development, the simulation and the testing of advanced control methods, their implementation on industrial control systems.
Consulting	Consulting activities for the development of distributed monitoring and control applications utilizing wireless communication.
Training	LabVIEW™ courses and introduction to digital design using LabVIEW™ and VHDL; Electronic equipment design; Firmware development; Advanced control of industrial processes.

ADVANCED PROCESS CONTROL METHODS

Contact details

Name	**Advanced Process Control Methods**
Acronym	**MACP**
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Systems%20Engineering/MACP_Dulf.pdf
Address	2 Observatorului Str., 400489, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science, Automation Department**
Telephone	+40 264 401821
Fax	+40 264 401220
Director	Prof. Habil. Eng. Eva H. Dulf, PhD
e-mail	Eva.Dulf@aut.utcluj.ro





Areas of expertise

Complex process modelling and simulation
- Detailed models and simulations of various industrial and medical processes

Tuning, design and testing of various control solutions including advanced control algorithms such as predictive, fractional or robust control
- Conceptual design of various control loops from classical PID to advanced control algorithms
- Control strategy implementation
- Control optimization

Particular advanced monitoring, supervising and control methods for non-conventional processes and technologies
- Conceiving of new, efficient technologies in isotopic and molecular processes
- Modelling, monitoring and control of biochemical and biomedical processes
- Improved efficiency based on optimization; process maintenance

Team

Prof. Habil. Eng. Eva H. Dulf, PhD; Prof. Eng. Clement Festila, PhD; Assoc. Prof. Eng. Cristina I. Muresan, PhD; Assoc. Prof. Eng. Roxana Rusu-Both, PhD; Lect.Eng. Ioana Nascu, PhD; As. Eng. Izabela Birs, PhD
PhD students: MSc.Eng. Daniel D. Timis, MSc Eng. Ciprian Vogt, MSc Eng. Sergiu Chetan, MSc Eng. Toader Seretan, MSc Eng. Alex Danku, Msc.Eng. Andrei Kovari, MSc Eng. Andrei Tulbure, MSc Eng. Karoly Lengyel
Master students: Eng. Noemi Lorenzovici, Eng. Marius Bledea, Eng. Alexandru Rancea, Eng. Alexandru Berciu

Representative projects

Nanovaccinal Approaches for Colon Cancer, PN-III-P2-2.1-PED-2019-0844 (2020-2022), https://nanovacol.wixsite.com/home
Development of an intelligent combined imagistic - cytologic – molecular system to guide the diagnosis, risk stratification and the management of thyroid cancer, PN-III-P2-2.1-PED-2019-2536 (2020-2022), https://tircitogen.wixsite.com/home
Solid-State Bioprocess Development and Optimization for the Sustainable Production of Powerful Antioxidants from Grape Pomace using Filamentous Fungi, PN-III-P2-2.1-PED-2019-1660 (2020-2022), https://bioantox2020.wixsite.com/home
Novel Fractional Order Autotuners for Poorly Damped Systems to Ensure Improved Safety and Comfort, PN-III-P1-1.1-TE-2019-0745 (2019-2021), http://cristina-muresan.com/research/te1432020
A sedation patient simulator for patient-individualised optimal drug dosing in general anaesthesia, PN-III-P2-2.1-

PED-2019-0322 (2019-2021), http://cristina-muresan.com/research/552ped2019/
SWEETCONOMY - Functional collaboration model between public research organizations and the economic environment for the provision of high-level scientific and technological services in the field of bio-economy, PNIII-P1-1.2 PCCDI 2018, (2018-2020) https://sweetconomy.com
Robust fractional order event-based control for optimised resource allocation in complex cyber-physical closed loop systems, PN-III-P1-1.1-TE-2016-1396 (2018-2020), http://cristina-muresan.com/research/te652018/

Significant results

The most representative publications of the past 5 years:

1. Dulf, E. H., Bledea, M., Mocan, T., & Mocan, L. (2021). Automatic Detection of Colorectal Polyps Using Transfer Learning. *Sensors*, *21*(17), 5704.
2. Tulbure, A. A., Tulbure, A. A., & Dulf, E. H.* (2021). A review on modern defect detection models using DCNNs–Deep convolutional neural networks. *Journal of Advanced Research*
3. Lorenzovici, N., Dulf, E. H*., Mocan, T., & Mocan, L. (2021). Artificial Intelligence in Colorectal Cancer Diagnosis Using Clinical Data: Non-Invasive Approach. *Diagnostics*, *11*(3), 514.
4. Muresan, C. I., Birs, I. R., Dulf, E. H., Copot, D., & Miclea, L. (2021). A Review of Recent Advances in Fractional-Order Sensing and Filtering Techniques. *Sensors*, *21*(17), 5920.
5. Dulf, E. H., Saila, M., Muresan, C. I., & Miclea, L. C. (2020). An Efficient Design and Implementation of a Quadrotor Unmanned Aerial Vehicle Using Quaternion-Based Estimator. *Mathematics*, *8*(10), 1829.
6. Muresan, C. I., Birs, I. R., & Dulf, E. H.* (2020). Event-Based Implementation of Fractional Order IMC Controllers for Simple FOPDT Processes. *Mathematics*, *8*(8), 1378.
7. Ionescu, C. M., Dulf, E. H., Ghita, M., & Muresan, C. I. (2020). Robust controller design: Recent emerging concepts for control of mechatronic systems. *Journal of the Franklin Institute*, *357*(12), 7818-7844.
8. Dulf, E. H., Vodnar, D. C., Danku, A., Muresan, C. I., & Crisan, O. (2020). Fractional-order models for biochemical processes. *Fractal and Fractional*, *4*(2), 12.
9. Dulf, E. H., & Festila, C. (2020). Sensors for Cryogenic Isotope-Separation Column. *Sensors*, *20*(14), 3890.
10. Birs, I., Folea, S., Prodan, O., Dulf, E., & Muresan, C. (2020). An experimental tuning approach of fractional order controllers in the frequency domain. *Applied Sciences*, *10*(7), 2379.
11. Catargiu, G., Dulf, E.H.,* & Miclea, L. C. (2020). Connected Bike-smart IoT-based Cycling Training Solution. *Sensors*, *20*(5), 1473.
12. Dulf, E. H. (2019). Simplified fractional order controller design algorithm. *Mathematics*, *7*(12), 1166.

Significant solutions:
Monitoring, modelling and control of isotope separation processes and separation cascade
Fractional order control strategies for time delay and MIMO processes
Products and technologies:
1. Mathematical models of complex chemical and biochemical processes
2. Special transducer for cryogenic liquid nitrogen level in the condenser of an isotope separation column
3. Special transducer for carbon monoxide level in the boiler of an isotope separation column
4. Monitoring system for ^{13}C cryogenic isotope separation column
5. Advanced control strategies for ^{13}C cryogenic isotope separation column and a separation cascade
6. Frequency analyzer based on a direct, simplified algorithm

Patents:
1. R.A. Munteanu, E.H. Dulf, C. Festila, R. Munteanu, G. Todoran, “Analogue electronic transducer for measuring power in direct current circuits, RO-128666/2018
2. Experimental unit for studying the fractional order characteristics of non-Newtonian fluids, Romanian patent proposal no. A00389/31.05.2018
3. Process for tuning fractional controllers for multivariable processes with deadtimes, , RO132450-A2/2016
4. Wind turbine, RO133354-A2/2017
5. Procedure for detection and diagnosis of intrathoracic pulmonary tumours based on ultrasound image analysis, Patent proposal A01040/04.12.2018

The offer addressed to the economic environment

Research & development	Identifying fundamental principles and methodologies that enable systems to exhibit intelligent, goal-oriented behaviour, and developing innovative instruments to monitor, manipulate, and control systems Tuning, design and testing of various control solutions using advanced control algorithms, such as predictive, fractional or robust control Modelling biochemical and biomedical processes
Consulting	Consulting in simulation, design, implementation and maintenance of control systems for multiple industrial field; Consulting in structural and nonlinear modelling of complex processes Consulting in process management using different simulation environment
Training	Complex process modelling and simulation Tuning, design and testing of various control solutions including advanced control algorithms such as predictive, fractional or robust control

ROBOTICS AND NONLINEAR CONTROL

Contact details

Name	**Robotics and Nonlinear Control**
Acronym	**ROCON**
Logo	ROCON ROBOTICS AND NONLINEAR CONTROL
Site	http://rocon.utcluj.ro/
Address	Dorobanţilor str 71-73, Cluj-Napoca, 400609, Romania
Faculty Department	Faculty of Automation and Computer Science Department of Automation
Telephone	+40 264 20 2578
Fax	+40 264 401 585
Director	Prof. Dr. Eng. Lucian Busoniu
E-mail	Lucian.Busoniu@aut.utcluj.ro

Areas of expertise

Our group works on **Ro**botics and Nonlinear **Con**trol (ROCON) at the Department of Automation of the Technical University of Cluj-Napoca. Our research interests range from mobile robotics and robot modeling, to fundamental nonlinear control and estimation using methods from computational and artificial intelligence. These two major directions are connected via applications of nonlinear control to robotics.

Team

Professors: Lucian Busoniu, group lead; Zsofia Lendek; Gheorghe Lazea, honorary member
Associate Professors: Levente Tamas
Assistant Professors: Alexandru Codrean, Cosmin Marcu, Tassos Natsakis
PhD and long-term research students: Bilal Yousuf, Matthias Rosynski, Benjamin Kelenyi, Alexandru Pop, Ioana Lal, Florin Gogianu, Amalia Matyas, Zoltan Nagy, Molnar Szilard, Marian Pop, Mihalis Maer, Ioana Ulici, Bogdan Lazar, Tudor Santejudean
Technician: Adrian Lucaci

Representative projects (selection of 5 recent projects)

Control design for optimal estimation using heterogeneous sensors (HEROES), Young Teams grant, 2021-2022, PI Zsofia Lendek, http://lendek.net/TE185/

Advanced 3D perception with Time of Flight camera (TRAI), PTE grant, 2020-2022, institution PI Levente Tamas, http://rocon.utcluj.ro/~levente/?page_id=436

Targeted Robotic UppEr-arm REHABilitation (TRUE-REHAB). Young Teams Grant, 2020-2022, PI Tassos Natsakis, http://rocon.utcluj.ro/true-rehab

Search, Identification, and Collection of Marine Litter with Autonomous Robots (SeaClear), H2020 Research & Innovation Action, 2020-2023, PI Lucian Busoniu, https://seaclear-project.eu/

Active perception for flexible manipulation in intelligent manufacturing (TEAMFIT), Bridge Grant, 2016-2018. PI Levente Tamas, http://rocon.utcluj.ro/~levente/?page_id=291

Significant results

Selection of 5 representative publications in the past 5 years

Z. Nagy, Zs. Lendek, L. Busoniu, *TS fuzzy observer-based controller design for a class of discrete-time nonlinear systems*. IEEE Transactions on Fuzzy Systems, 2020.

Frohlich R, Tamas L, Kato Z. 2019. *Absolute Pose Estimation of Central Cameras Using Planar Regions*. IEEE Transactions on Pattern Analysis and Machine Intelligence.

Boey H, Verfaillie S, Natsakis T, Sloten J Vander, Jonkers I. 2019. *Augmented Ligament Reconstruction Partially Restores Hindfoot and Midfoot Kinematics After Lateral Ligament Ruptures*. Am J Sports Med.

Feng G, Buşoniu L, Guerra T-M, Mohammad S. 2019. *Data-Efficient Reinforcement Learning for Energy Optimization of Power-Assisted Wheelchairs*. IEEE Transactions on Industrial Electronics. 66:97340–97344

Zs. Lendek, Z. Nagy, J. Lauber, *Local stabilization of discrete-time TS descriptor systems*. Engineering Applications of Artificial Intelligence, vol. 67, pages 409-418, 2018.

Patents:

Automatic Obstacle Detection and Breaking System for Cars, L. Tamas, Gh. Lazea, no A10006/16.02.2011.

Metodă De Vizualizare A Traseului Unui Vehicul Autonom Folosind Realitatea Augmentata, C. Militaru, L. Tamas, L. Tofalvi, request no. A/000368/2018, patent no. 133736.

What we offer to the economic environment

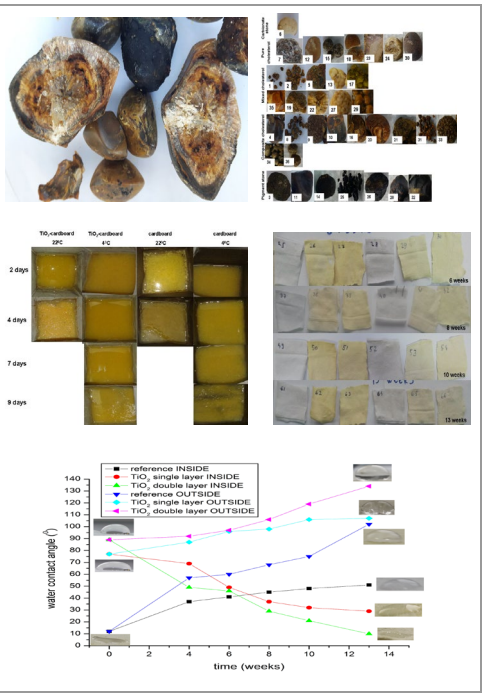
Research & development	Signal processing Control algorithms Monitoring and estimation Artificial intelligence and machine learning. Mobile robotics and robotic manipulation Advanced system control and monitoring Embedded software design
Consulting	Control system design and development Monitoring system design and development Robotic system design & engineering 2D and 3D mapping and surveys
Applied engineering services	Process and control engineering Robotics related services Process equipment related services
Training	Control and monitoring System identification Optimization and optimal control Computer integrated manufacturing Process equipment Industrial robotics Mobile vehicles

CENTER OF SCIENTIFIC RESEARCH OF ENVIRONMENT, FOOD AND HEALTH SAFETY- CCESMAS

PHYSICAL-CHEMICAL ANALYSIS

Contact details

Name	**Center of Scientific Research of Environment, Food and Health Safety- Physical-Chemical Analysis**
Acronym	**CCESMAS-Phys-Chem**
Logo	CCESMAS Universitatea Tehnica Cluj Napoca Centrul Universitar Nord din Baia Mare
Site	http://chimie-biologie.ubm.ro/cercetare.html
Address	76 Victoriei Str., Baia Mare, Romania
Faculty Department	**Faculty of Sciences** **Chemistry-Biology Department**
Telephone	+40 0262 276059
Fax	+40 0262 275368
Director	Prof. Dr. Eng. Anca Mihaly Cozmuta
e-mail	ancamihalycozmuta@gmail.com



Areas of expertise

Food safety and security: • Food control; • Functional food; •Traceability of contaminants along of food chain • Active food packages
Environment: • Environment monitoring: wastes, organic and inorganic pollutants from different matrices • Recovery of valuable metals from different wastes (including also the mining water wastes)
Science of material: • Nanomaterials based on titania, silica and noble metals: preparation, characterization and applications in depollution, recovery of metals, self cleaning, food preservation, etc...
Chemometry: • Statistically processing the experimental data; • Mathematical modelling of experimental data

Team

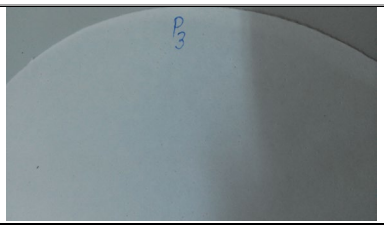
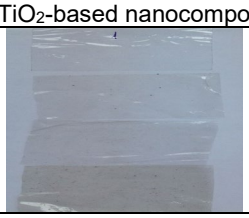
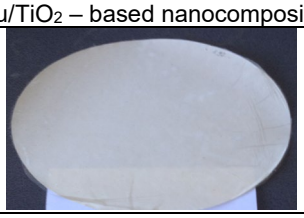
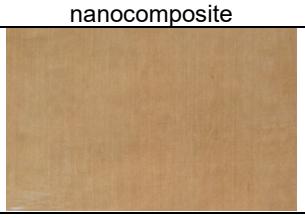
Prof. Dr. Eng. Anca Mihaly Cozmuta (coordinator), Associate Prof. Dr. Camelia Nicula, Associate Prof. Dr. Anca Peter, Associate Prof. Dr. Eng. Leonard Mihaly Cozmuta

Representative projects

FOODCHAIN4EUROPE - HIGH QUALITY FOOD CHAIN 4 EUROPE – INTERREG IV (2017-2022)
GRAFOOD – "Active GRAphene based FOOD packaging systems for a modern society", PNIII-P3-3.2 COFUND-M-ERA.NET II-GRAFOOD, (2017-2020)
STRUCTural and PHOtochemical investigations of a nanosized composite as active component of paper based PACKage designed for food applications (STRUCT-PHO-PACK) – Romania-Russia bilateral projects; 2017-2018. 4517-3-16/18; 01-3-1115-2014/2018
SMARTPACK-"Smart functions of packages containing nano-structured materials in food preservation", (2012-2015)
DAC, **"Analysis and physically-chemically characterization of liquid and solid samples"**, (2012-2014)
RIVAM, **"Rehabilitation of tailings ponds by application ofd amendments and cultivation of vegetal species with high adaptability to the heavy metals"**, http://chimie-biologie.ubm.ro/RIVAM/ (2008-2011)
BIOMEG, **"Bioaccumulation of heavy metals in soil-vegetables-human chain"**, http://chimie-biologie.ubm.ro/biomeg/index.html (2008-2011)
AIBD, **"**Integrated application **of databases for adopting and restructuring of protection natural and artificial factors in zootehnic farms"**, (2005-2008)
SIG, **"Designing the hazards charts and environment assessment in mining areas of Maramures and Satu Mare counties using GIS"**, (2005-2008)
ZEMIP, **"Developing of a biophysical system based on zeolites-microorganisms-vegetal species for ecoremediation of tailing ponds coming from gold-silver preparation industry"**, http://chimie-biologie.ubm.ro/zemip/ (2009-2011)

Significant results

Active packages for food industry

		
Polypropilene flask modified with Ag/TiO_2-based nanocomposite	Polypropylene flask modified with Au/TiO_2 – based nanocomposite	Paper sheet modified with Ag/TiO_2 nanocomposite
		
Flexible film with graphene	Paper packaging based on graphene	Paper packaging with self-cleaning properties

The most representative publications of the past 5 years

1. A. Peter, C. Nicula, L. Mihaly-Cozmuta, A. Mihaly-Cozmuta. New active package based on titania coated on cardboard for storage of fresh prepared orange juice. J Food Process Eng. 2019, 42(2), Article Number: e12965
2. A. Peter, A. Mihaly-Cozmuta, C. Nicula, L. Mihaly-Cozmuta, A. Vulpoi, L. Baia. Fabric impregnated with TiO_2 gel with self-cleaning property, Int. J. Applied Ceram. Technol. 2019, 16(2), 666-681
3. R. Apjok, A. Mihaly Cozmuta, A. Peter, L. Mihaly Cozmuta, C. Nicula, M. Baia, A. Vulpoi-Active packaging based on cellulose-chitosan-Ag/TiO_2 nanocomposite for storage of clarified butter. Cellulose (2019) 26: 1923.
4. T. Wojciechowski, A. Rozmysłowska-Wojciechowska, G. Matyszczak, M. Wrzecionek, A. Olszyna, A. Peter, A. Mihaly-Cozmuta, C. Nicula, L. Mihaly-Cozmuta, S. Podsiadło, D. Basiak, W. Ziemkowska, A. Jastrzębska - Ti2C MXene Modified with Ceramic Oxide and Noble Metal Nanoparticles: Synthesis, Morphostructural Properties, and High Photocatalytic Activity, Inorganic Chemistry, 2019, 58, 7602−7614.
5.Peter, Anca; Nicula, Camelia; Mihaly-Cozmuta, Leonard; et al., An efficient and innovative method to preserve the harvested plums during storage. Journal of Food Processing and Preservation, 42(1), e13398, 2018
6.Mihaly-Cozmuta, Anca; Peter, Anca; Craciun, Grigore; et al., Preparation and characterization of active cellulose-based papers modified with TiO2, Ag and zeolite nanocomposites for bread packaging application. Cellulose, 24(9), 3911-3928 , 2017
7.Peter, Anca; Mihaly-Cozmuta, Anca; Nicula, Camelia; et al., Assessment of TiO2 photoactivity on the lead removal: kinetic and mechanistic processing. Water Science and Technology, 75(11), 2508-2519 , 2017.
8.Peter, Anca; Mihaly-Cozmuta, Anca; Nicula, Camelia; et al., UV Light-Assisted Degradation of Methyl Orange, Methylene Blue, Phenol, Salicylic Acid, and Rhodamine B: Photolysis Versus Photocatalyis Water Air and Soil Pollution 228(1), Number: 41, 2017
9.Anca Peter et al., "Changes in the microbiological and chemical characteristics of white bread during storage in paper packages modified with Ag/TiO_2–SiO_2, Ag/N–TiO_2 or Au/TiO_2", *Food Chemistry* 197, 790–798, 2016.
10.István Lázár, József Kalmár, Anca Peter, Anett Szilágyi, Enik˝o Gy˝ori, Tamás Ditrói,István Fábián. "Photocatalytic performance of highly amorphous titania–silica aerogels with mesopores: The adverse effect of the in situ adsorption of some organic substrates during photodegradation", *Applied Surface Science* 356, 521–531, 2015.
11.Anca Mihaly Cozmuta et al., "Preparation and characterization of improved gelatin films incorporating hemp and sage oils", *Food Hydrocolloids* 49, 144-155, 2015
12.Anca Peter et al., "Silver functionalized titania-silica xerogels: Preparation, morphostructural and photocatalytic properties, kinetic modeling", *Journal of Alloys and Compounds*, 648, 890-902, 2015.

Patent:

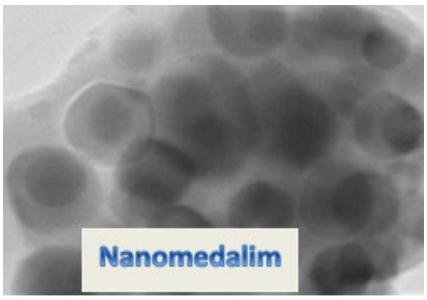
Methods to obtain intelligent packages containing nano-structured materials used in fod preservation -European patent, filing No. 1023377/ 28.08.2015

The offer addressed to the economic environment

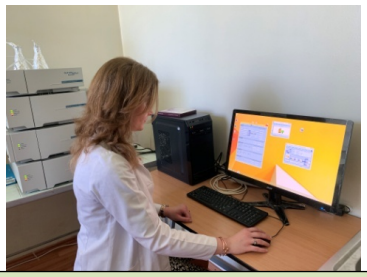
Research & development	Pollution monitoring; Rehabilitation of polluted areas; Physical-chemical control and expertise of food; Food packaging; Nanomaterials: preparation, characterization, application; Recovery of valuable metals (Au, Ag, Cu) from wastes; Waste waters treatment; Application of nanomaterials in environment deppolution; Intelligent and active food packages: nano-packages; bioactive edible films;
Consulting	Technologies for remediation of polluted soils; Technologies for recovery of valuable metals from wastes (Cu, Au, Ag); Food packaging; Food safety;
Applied engineering services	Technologies for remediation of polluted soils; Technologies for recovery of valuable metals from wastes (Cu, Au, Ag); Physical-chemical analysis of solid and liquid samples; Analysis of mineral elements in different matrices
Training	Operation of analysis equipment (FTIR, TOC, Analyst Perkin Elmer 800); Statistically processing of experimental data; Nanomaterials: preparation, characterization and applications; Food packaging.

NANOMATERIALS AND APPLICATIONS IN ENVIRONMENTAL AND FOOD ANALYSIS

Contact details

Name	**Nanomaterials and application in environmental and food analysis**
Acronym	**Nanomedalim**
Logo	
Site	**http://research.utcluj.ro/index.php/chemistry-biology.html**
Address	76 Victoriei Street, 430072, Baia Mare, Romania
Faculty Department	**Faculty of Sciences, Chemistry and Biology Department**
Telephone	+40 264 202977
Director	Assoc. prof. dr. Thomas Dippong
e-mail	Thomas.DIPPONG@cb.utcluj.ro

Gas chromatograph G3950A INTUVO, Agilent 2019



Liquid chromatograph HPLC YL 9100, 2016

Areas of expertise

Synthesis and characterisation of nanoparticles embedded in silica, polyvinilalcool and PVA-SiO_2 matrix
- Synthesis of the nanocomposit oxdic system $Co_xFe_{3-x}O_4$ $Ni_xCo_{1-x}Fe_2O_4$, $Ni_xZn_{1-x}Fe_2O_4$, $Zn_xCo_{1-x}Fe_2O_4$ $Cu_xCo_{1-x}Fe_2O_4$, $Mn_xCo_{1-x}Fe_2O_4$, $Zn_xMn_{1-x}Fe_2O_4$, $Ni_xMn_{1-x}Fe_2O_4$ oxidic system nanoparticles embedded in silica, PVA and PVA-SiO_2
- Structural (TG-DTG-DTA-MS, XRD, FT-IR, Mossbauer, BET, porosity), morphological (TEM; SEM, AFM) and magnetic (VSM, M_s, M_r, H_c, K) characterization of ferrite-based nanocomposites.
- Photocatalytic and coloristic applications of ferritic nanomaterials embedded in silica matrices.

Environmental chemistry. Mathematical modelling of environmental data;
-Assessment of soil pollution due to microelements content; transfer of microelements from soil to plant, study of the influence of ionic exchange processes on microelements transfer in the soil-plant system; QSPR/QSAR studies
-Air quality analysis and monitoring; Analysis of air pollutant and their spatial and temporal distribution; analysis of wet air deposition
- Analysis of physico-chemical parameters of water and the interpretation of their trend; assessment of the water quality in water reservoirs, lakes, groundwater, glacial lakes and drinking water supply network, assessment of the impact of anthropogenic activities on water quality parameters, chemical modelling of groundwater quality in the aquifer; calculus of heavy metal pollution index, heavy metal evaluation index; human health risk assessment; water quality index, spectrometric analysis by molecular absorption spectrometry and by atomic absorption spectrometry; mathematical modelling of environmental data; drawing the map of the heavy metal distribution in the water reservoirs.

Physico-chemical and sensory characterization of food
-Assesment of hydrolysis and oxidation processes in animal fats; monitoring of chemical parameters during storage
-**increasing the oxidative stability of alimentary fat by the** addition of antioxidants; Assessment of physico-chemical and sensorial parameters of wines;
-Chromatographic analysis of food components and environmental pollutants by HPLC and gas chromatography

Team

Assoc. prof. dr. eng Thomas Dippong, Assoc. prof. dr. Zoita Marioara Berinde; Assoc. prof. dr. Cristina Mihali, Lecturer dr. eng. Claudia Butean, Lecturer dr. eng. Flavia Pop

Representative projects

CLAMROUA, "Clean Air Management in the Romania - Ukraine Transboundary Area", European Union, Hungary-Slovakia-Romania-Ukraine, ENPI- Cross-border Cooperation Program project, http://www.territorialcooperation.eu/frontpage/show/20419 (2013-2015)
Creșterea stabilității chimice a grăsimilor animale bogate în acizi nesaturați prin adaosul de antioxidanți, GNaC ARUT 2018, Universitatea Tehnică din Cluj-Napoca, Centrul Universitar Nord din Baia Mare, https://research.utcluj.ro/index.php/competitii-nationale.html
POIM project 118881- Participatory management of the Natura 2000 sites Pricop-Huta-Certeze, Tisa Superior and of the protected natural area Ronișoara Forest. 2020-2022, https://www.heidenroslein.ro/arhive/1446

Infrastructure
Gas chromatograph INTUVO, Agilent 2019
HPLC YL INSTRUMENT 9100 , produced in 2016
Spectrophotometer Perkin Elmer, produced 2014
WTW pH-meter, produced 2014

Significant results

The most representative publications of the past 5 years:

1. **T. Dippong**, M-A. Hoaghia, **C. Mihali**, E. Cical, M. Calugaru, Human health risk assessment of some bottled waters from Romania, *Environmental Pollution*, 2020, 267, 115409, FI – 8.071 (Q1).
2. O M Roșca, **T. Dippong**, M. Marian, **C. Mihali**, L. Mihalescu, M-A Hoaghia, M. Jelea, Impact of anthropogenic activities on water quality parameters of glacial lakes from Rodnei Mountains, Romania, *Environmental Research*, 2020, 182, 109136, FI – 6.498 (Q1).
3. **T. Dippong**, E.A. Levei, D. Toloman, B-T. Lucian, O. Cadar, Investigation on the formation, structural and photocatalytic properties of mixed Mn-Zn ferrites nanoparticles embedded in SiO_2 matrix. *Journal of Analytical and Applied Pyrolysis*. 158 (2021) 105281, FI – 5.541 (Q1)
4. **T. Dippong**, M.D. Lazar, I.G. Deac, P. Palade, I. Petean, G. Borodi, O. Cadar, The effect of cation distribution and heat treatment temperature on the structural, surface, morphological and magnetic properties of $Mn_xCo_{1-x}Fe_2O_4$@ SiO_2 nanocomposites, *Journal of Alloys and Compounds* 895 (2022), 162715, FI – 5.316 (Q1).
5. **T. Dippong**, E.A. Levei Erika, C. Leostean, O. Cadar, Impact of annealing temperature and ferrite content embedded in SiO_2 matrix on the structure, morphology and magnetic characteristics of $(Co_{0.4}Mn_{0.6}Fe_2O_4)_\delta$ $(SiO_2)_{100-\delta}$ nanocomposites. *Journal of Alloys and Compounds* 868 (2021), 159203, FI – 5.316 (Q1).
6. **T. Dippong**, O. Cadar, I.C. Deac, M. Lazar, G. Borodi, A.E. Levei, Influence of ferrite to silica ratio and thermal treatment on porosity, surface, microstructure and magnetic properties of $Zn_{0.5}Ni_{0.5}Fe_2O_4/SiO_2$ nanocomposites. *Journal of Alloys and Compounds* 498 (2020) 166168, FI – 5.316 (Q1).
7. **T. Dippong**, E.A. Levei, Cadar Oana, Recent Advances in Synthesis and Applications of MFe_2O_4 (M=Co, Cu, Mn, Ni, Zn) Nanoparticles. *Nanomaterials*, 11 (2021) 1560. FI – 5.076 (Q1)
8. **T. Dippong**, I.G. Deac, M.D,Lazar, I. Petean, E.A. Levei, G. Borodi, O. Cadar, Effect of heat-treatment temperature and zinc addition on magnetostructural and surface properties of manganese nanoferrite prepared by an ecofriendly sol–gel synthesis, *Journal of Materials Research and Technology*. 15 (2021) 6528-6540, FI – 5.039 (Q1)
9. **T. Dippong, C. Mihali**, MA. Hoaghia E. Cical, A. Cosma, Chemical modeling of groundwater quality in the aquifer of Seini town - Somes Plain, Northwestern Romania, *Ecotoxicology and environmental safety*, 2019,168, 88-101, FI – 4.872 (Q1)
10. **T. Dippong, C. Mihali**, Z. Vosgan, A. Daniel, A. Dumuta, Thermal behavior of different cocoa powder varieties and their physicochemical, phytochemical and microbiological characteristics, *Journal of Thermal Analysis and Calorimetry*, 2021, 143 (6), 4217-4228, FI – 4.626 (Q1)
11. **T. Dippong**, E.A. Levei, F. Goga, O. Cadar, Influence of Mn^{2+} substitution with Co^{2+} on structural, morphological and coloristic properties of $MnFe_2O_4/SiO_2$ nanocomposites. *Mater Characterization*, 172 (2021) 110835, FI - 4.342 (Q1).
12. Z. Vosgan, **T. Dippong**, M.A. Hoaghia, **C. Mihali**, L. Mihalescu, Pedological characterization of soils in Gutai mountains near a mining area, Romania. *Environmental Earth Sciences*, 80 (2021) 164, FI – 2.784 (Q2).
13. **F.Pop**, L. Mihalescu, Effects of *α*-tocopherol and citric acid on the oxidative stability of alimentary poultry fats during storage at low temperatures, *International Journal of Food Properties*, 20 (2017),1085-1096. , FI – 2.727 (Q3).
14. **T.Dippong**, **C.Mihali**, Z.Voșgan, A. Avram, **Z.Berinde**, A.Dumuța, Establishment of physico-chemical and microbiological parameters of some red wine assortments by comparative analysis. *Revista de chimie*, 2020, 71 (1), 411-415 , FI – 1.755 (Q3).
15. **T. Dippong, C. Mihali**, D. Nasui, **Z.Berinde, C.Butean**, Assessment of water physicochemical parameters in the Strimtori-Firiza reservoir in Northwest Romania, *Water Environ Research*, 2018, 90 (3), 220-233 FI – 1.243 (Q3).

Products and technologies:

1. Obtaining of $Co_xFe_{3-x}O_4$ $Ni_xCo_{1-x}Fe_2O_4$, $Ni_xZn_{1-x}Fe_2O_4$, $Zn_xCo_{1-x}Fe_2O_4$ $Cu_xCo_{1-x}Fe_2O_4$, $Mn_xCo_{1-x}Fe_2O_4$, $Zn_xMn_{1-x}Fe_2O_4$, $Ni_xMn_{1-x}Fe_2O_4$ oxidic system nanoparticles embedded in silica, PVA and PVA-SiO_2 matrix with structural, morphological, magnetic, coloristic and photocatalytic activities.
2. Studies on the impact of anthropogenic activities on water quality parameters, chemical modelling of groundwater quality in the aquifer, Modelling seasonal variation of physico-chemical parameters in the drinking water supply network.
3. Gas-chromatography method for analysis of wine and brandy components, HPLC method of analysis
4. Method of determination of the microelements transfer factors from soil to plant

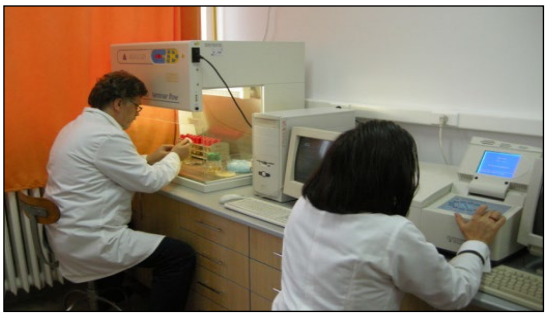
The offer addressed to the economic environment

Research & development	Depollution solution using nanotechnology Determination of soil characteristics related to the transfer process of the pollutant elements from soil to plants; Quantifying the impact of microelements in soil on the plants grown in areas with historical anthropogenic pollution and comparison with unpolluted reference areas; Studies on air pollution sources. Develop the" Action Plan for Good Air Quality Maintenance in Maramures County"
Consulting	Modelling the traceability of microelements on the food chain soil-plant-food-human. Human health risk assessment in areas polluted with microelements.
Training	Training on the nanoparticles synthesis and their application in environment and food analysis, Training on the negative effects of microelements on human health, measures of minimizing the risk to health.

ENVIRONMENTAL PROTECTION THROUGH CONSERVATION AND REMEDIATION

Contact details

Name	**Environmental Protection through Conservation and Remediation**
Acronym	**ENVIRONMENTALIA**
Logo	
Site	
Address	76, Victoriei Street, 430122, Baia Mare, Romania
Faculty Department	**Faculty of Science** **Chemistry and Biology Department**
Telephone	+40 262 276059
Fax	+40 262 275368
Director	Assoc. Prof. Dr. Marian Jelea
e-mail	mjelea@yahoo.com



Areas of expertise

Assessment of biodiversity in natural and anthropogenic ecosystems, the conservation or remediation of degraded lands in perspective by promoting restoration of natural habitats.
Identifying, testing and application of combinations of species including microorganisms (bacteria, cianoficee), fungi and plants able to remedy degraded soils and stimulate the installation of natural habitats.
Recovery of copper through bio-technological procedures from the low-grade ores.
Applied research on tissue culture and plants multiply "in vitro".

Team

Assoc. Prof. Dr. Marian Jelea, Assoc. Prof. Dr. Monica Marian, Assist. Prof. Dr. Stela-Gabriela Jelea,
Assist. Prof. Dr. Oana Mare Roșca, Assist. Prof. Dr. Lucia Mihalescu

Representative projects

„Drawing proper assessment study in order to obtain the environmental permit”, contract with industry, 2016-2017
“Monitoring action microbiota in order to use them in the soil remediation ponds”, PNII, (2007-2010)
“We can refund flowers borrowed from our children?”, Environment Fund Administration, (2008-2009)
”Conservation of biodiversity and ecological reconstruction of the lower basin of the River Tour - Adrian pond” AFM, (2007-2008)
„Evolution of installation of iron and sulphur oxidizing bacteria in the sulphidic mine wastes and their influence in generating acid mine drainage”, GRANT CNCSIS, http://194.102.64.7/GranturiFinalizate/faces/Projects/ProjectDetails.jsp (2007-2008)

Significant results

The most representative publications of the past 5 years:

1. **Oana Mare Roșca,** Thomas Dippong, **Monica Marian**, Cristina Mihali, **Lucia Mihalescu,** Maria-Alexandra Hoaghia, **Marian Jelea**. Impact of anthropogenic activities on water quality parameters of glacial lakes from Rodnei mountains, Romania. Environmental Research, Volume 182. Published: March 2020.
2. Damian F., **Jelea S.G.,** Lăcătuşu R., Mihali C. The treatment of soil polluted with heavy metals using the Sinapis alba l. and organo zeolitic amendment. Carpathian Journal of Earth and Environmental Sciences, Vol. 14, No. 2, p. 409 - 422. Published: 2019.
3. **Jelea S.G., Jelea M., Mihalescu L.,** Vosgan Z., Jelea O.C. Monitoring Food Additives and Nutritional Composition of Labels of Food Bases. Bulletin USAMV, series Agriculture 76(1): 40-45. Published: 2019.
4. **Mihalescu L., Marian M., Jelea S.**, Pop, F., Maxim A.., Voşgan Z. Research Concerning the Fighting of *Polystigma rubrum* Fungi under the Climate Conditions of Șomcuta Mare Area Bulletin UASVM series Agriculture 76(2): 73-77. Print ISSN 1843-5246; Electronic ISSN 1843-5386. Published: 2019.
5. Voşgan Z., **Jelea S., Marian M., Roşca-Mare O., Mihalescu L.** Assessment of Biomass Production on Pastoral Meadows in the Gutai Mountains. Bulletin UASVM series Agriculture 76(2): 109-110. Published: 2019.
6. **Monica Liliana Marian.** Possibilities of Sustainable Development in Protected Natural Areas. Case Study - Lazuri Village Overlaid with ROSCI 0214 Tur and ROSPA RIVER 0068 the Lower Meadow of the Tour. Proceeding of the International Conference Communication, Context, Interdisciplinarity, ISBN: 8624 978 606 – 14-3, p. 57-63.

Published: 2019.
7. **Monica Liliana Marian.** Local Community Support to Polluted Sites Management. Proceeding of the International Conference Communication, Context, Interdisciplinarity, ISBN: 8624 978 606 – 14-3: p. 64-69. Published: 2019.
8. **Mihalescu L.,** Voşgan Z., **Marian M., Jelea S., Mare Roşca O.,** Pop, F., Maxim A., Cordea M. Studies Regarding the Combat of the Braches Burns Produced by the *Phomopsis vaccinii* at Blueberry Bushes Cultivated in Maramures county. Bulletin USAMV, series Agriculture 75(2): 87–92. Published: 2018.
9. Z Voşgan, L Mihalescu, S Jelea, A Dumuța, F Pop, The Hygienic Quality of Raw Romanian Goat Milk Depending on the Milking Season Bulletin USAMV series Agriculture 75(1), 50-53. Published: 2018.
10. Z Voşgan, L Mihalescu, R Vidican, M Marian, S Jelea, O Mare. Monitoring the Vegetation Communities on the Southern Slope of the Gutai Mountains on the Basis of Ecological Indices Bulletin USAMV series Agriculture 75(1), 54-55. Published: 2018.
11. **Monica Marian, Oana Mare Roşca, Lucia Mihalescu,** Zorica Voşgan. Antifungal Effect of Spice Extracts - Possible Solutions for Biological Preservation of Food. Journal of Faculty of Food Engineering, Ştefan cel Mare University of Suceava, Romania, Volume XVII, Issue 2, 103 – 112. Published: 2018.
12. Alexandru Laposi, Aurel Ardelean, **Monica Marian**, Aspects of invasive plants dominated habitats use by marsh warnbler (Acrocephalus palustris) in Someș river floodplain. Carpathian Journal of Earth and Environmental Sciences, Volume: 13 Issue: 2, Pages: 515-521. Published: 2018.
13. **Mare Roșca Oana**, **Marian, M.** Alexandra Erica Pușcaș, Edita Agneta Pop, Claudia Marian and Daniel Năsui. Positive and Negative Impacts of Tourism in Breb Village. In Proceedings of the 32nd International Business Information Management Association Conference (IBIMA), 15-16 November 2018 Seville Spain. Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth. 5216-5219 p.ISBN: 978-0-9998551-1-9. Published: 2018.
14. Claudia Marian, **Monica Marian, Mare Roșca Oana**, Daniel NASUI, **Lucia MIHALESCU**, Zorica Vosgan and Ighian Diana. Socio-Economic Assessment of Measures to Preserve the Quality of Water Indispensable to Ecological Tourism. Proceedings of the 32nd International Business Information Management Association Conference (IBIMA), 15-16 November 2018 Seville Spain. Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth. 5205-5218 p. ISBN: 978-0-9998551-1-9. Published: 2018.
15. Voşgn, Z., **Mihalescu, L., Jelea, M., Marinan, M.,** Dumuţa A., Pop, F., **Mare Roşca O.,** Blidar, C.F. The incidence of coagulase-positive staphylococci (*Staphylococcus aureus* and other species) in raw goat milk collected during different seasons. Analele Universităţii din Oradea, Fascicula de Biologie, Tom XXIV, Issue 2, pp. 66-69. Print-ISSN: 1224-5119; CD-ISSN: 1842-6433; e-ISSN: 1844-7589. Published: 2017.
16. Viorica, Cosier; Marian, Monica. The advent of genomics and its potential contribution to the development of quantitative genetics Romanian Biotechnological Letters. Volume: 22 Issue: 5 Pages: 12847-12859 Published: SEP-OCT 2017.
17. **Mare Roşca Oana**, Pop, R., **Marian, M., Mihalescua, L.,** Voşgan, Z., Glodean, I. Water quality assessment of the Usturoi Valley assisted by the macrozoobentic bioindicators. Scientific Bulletin Series D: Mining, Mineral Processing, Non-Ferrous Metallurgy, Geology and Environmental Engineering, 31 (1): 83-89. Published: 2017.
18. **Jelea S.G., Jelea M.,** Vosgan Z., **Mihalescu L.,** Jelea O.C. Copper toxicity on *Triticum aestivum* L and *Lactuca sativa* L: effects on germination and growth. Bulletin of University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca, Agriculture, Vol. 73(2): 253-261. ISSN 1843-5246, e- ISSSN: 1843-5386. Published: 2016.
19. A. Dumuta, Z. Vosgan, M. Jelea, F. Pop, T. Dippong, L. Mihalescu, C. Mihali. Microbiological Aspects Considering the Production of Nutraceutical Curd Containing Onion, Animal Science and Biotechnologies, Vol.49, nr. 2, pp. 40-45. Published: 2016.

The offer addressed to the economic environment

Research & development	Evaluation of species of flora / fauna, microorganisms, fungi, from natural and anthropogenic habitats in order to protect themselves or to remedy environmental. Identifying biological methods based on the use of complex organisms able to reduce contamination of soil / water and facilitate the restoration of ecosystems; Identification of plant extracts alelopatic greenhouse (natural pesticides) in weed control and phytopathogenic; In vitro multiplication of species of plants for remediation and / or cultivation; The analysis, monitoring and diminishing of the effects produced by the polluting factors from industry; Evolution of installation of iron and sulphur oxidizing bacteria in the sulphidic mine wastes and their influence in generating acid mine drainage; Research studies for native vegetation installed in the acidic mine waste areas. Recovery of copper through biotechnological procedures from the low-grade ores. Reducing acid mine drainage (AMD) phenomena through passive methods.
Consulting	Structure and function in natural ecosystems and to restore contaminated their. Growing plants in different conditions of land polluted and / or contaminated. Evaluation of medical resources in the spontaneous flora, possible methods for obtaining the active principles of tissue culture.
Training	Structure and function in natural ecosystems and to restore contaminated their. Growing plants in different conditions of land polluted and / or contaminated. Evaluation of medical resources in the spontaneous flora, possible methods for obtaining the active principles of tissue culture.

FOOD INDUSTRY GROUP

Contact details

Name	**Food Industry Group**
Acronym	**GCDIA**
Logo	GCDIA FOOD INDUSTRY GROUP
Site	https://research.utcluj.ro/tl_files/research/Research%20Domain/Chimie-Biologie/GCDIA_Giurgiulescu.pdf
Address	76, Victoriei Str., 430122, Baia Mare, Romania
Faculty Department	**Faculty of Sciences, Chemistry and Biology Department**
Telephone	+40 740310674
Fax	+40 262 275368
Director	Assoc. Prof. Dr. Ing. Hab. Liviu Giurgiulescu
e-mail	giurgiulescu@gmail.com, +40 740 310674

Areas of expertise

Food Engineering
Fermentation technology, biotechnology, extractive technology.
Dairy industry:
- milk-processing in order to obtain consumption milk and other dairy products;
- laboratory tests to check the conformity of raw materials and finished products.

Food quality control:
- features that different foods must meet to fit existing standards,
- quality control of the process streams to obtain food,
- laboratory tests to verify compliance with various control parameters.

Microbiology of food
- Hygiene of food companies

Team

Assoc. Prof. Dr. Liviu Giurgiulescu, Assist. Prof. Dr. Anca Dumuţa, Assist. Zorica Voşgan Marcela,

Representative projects

- "Research mobility within SEE Grants 2014-2021" – 2018
- Development of Edible Films to Enchance Shelf-life of Muscle Foods, EEA-RO-NO-2018-0157
- "Guidance in order to make the beneficiary aware about the scientific areas of interest to the services provider in the field of food processing technology" – contract with industry, 2017
- "**International consulting contract BAUHAUS Science Press" –** 2015-2016
- Science without borders - Bridge between Central Europe and Balkan,

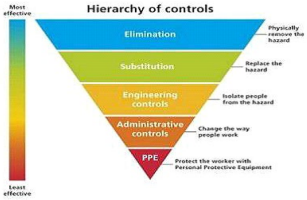
Significant results

ISI papers in Red zone:
1. Yakiang He, Ruolan Wang, Giurgiulescu Liviu, Qian Lu, 2017, An integrated algal-bacterial system for the bio-conversion of wheat bran treatment of rural domestic effluent, Journal of Cleaner Production Volume 165, 1 November 2017, Pages 458-467,https://doi.org/10.1016/j.jclepro.2017.07.119, ISSN: 0959-6526, Factor Impact 6.207
2. M. Mihaly Cozmuta, L. Mihaly Cozmuta, A. Peter, C. Nicula, Z. Vosgan, L. Giurgiulescu, A. Vulpoi, M. Baia, "Effect of monochromatic Far-Red light on physical-nutritional-microbiological attributes of red tomatoes during storage", *SCIENTIA HORTICULTURAE*, Vol.211, nr.1, pp.220-230, 2016, IF 1.538

Other publications in ISI journals
- Jakubowski, Marek; Giurgiulescu, Liviu, EDITORIAL INTRODUCTION SPECIAL ISSUE "FOOD SCIENCE, FOOD TECHNOLOGY AND EQUIPMENT IN FOOD INDUSTRY" CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 10 Issue: 5 Special Issue: SI Pages: 5-6 Published: 2018
- Sabatino, Leo; Iapichino, Giovanni; Vetrano, Filippo; et al., EFFECTS OF POLYETHYLENE AND BIODEGRADABLE STARCH-BASED MULCHING FILMS ON EGGPLANT PRODUCTION IN A MEDITERRANEAN AREA CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 10 Issue: 3 Pages: 81-89 Published: 2018

- Dumuta, Anca; Vosgan, Zorica; Pop, Flavia; et al., Study considering the microwave pasteurization of the raw milk used for yogurt production ROMANIAN BIOTECHNOLOGICAL LETTERS Volume: 23 Issue: 2 Pages: 13511-13518 Published: MAR-APR 2018
- Cimpenu, Baduca C.; Stoica, Felicia; Muntean, Camelia; Giurgiulescu Liciu et al., INFLUENCE OF CLONE ADND ROSTOCK ON TOTAL POLYPHENOLS, CATECHIN, EPICATECHIN AND RESVERATROL IN RED WINE CABERNET-SAUVIGNON FROM SIMBURESTI VINEYARD CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 10 Issue: 2 Pages: 159-167 Published: 2018
- Gougoulias, Nikolaos; Vagelas, Ioannis; Giurgiulescu, Liviu; et al., COMPARATIVE STUDY ON POLYPHENOLS CONTENT AND ANTIOXIDANT EFFECT OF SOME GRAPE VARIETIES GROWN IN CENTRAL GREECE CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 10 Issue: 1 Pages: 141-149 Published: 2018
- Gougoulias, Nikolaos; Vagelas, Ioannis; Giurgiulescu, Liviu; et al., THE COIR SUBSTRATE FOR SOILLESS CULTURES, REUSED AS SOIL AMENDMENT (STUDY IN VITRO AND IN VIVO) CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 9 Issue: 4 Pages: 61-70 Published: 2017
- Gougoulias, Nikolaos; Giurgiulescu, Liviu; Vagelas, Ioannis; et al., CHANGES IN TOTAL PHENOL CONTENT AND ANTIOXIDANT ACTIVITY OF GREEK TABLE OLIVE CULTIVAR AMFISSIS DURING MATURATION STUDIA UNIVERSITATIS BABES-BOLYAI CHEMIA Volume: 62 Issue: 2 Pages: 387-396 Part: 2 Published: 2017
- Gougoulias, Nikolaos; Wogiatzi, Eleni; Vagelas, Ioannis; Giurgiulescu Liviu et al., COMPARATIVE STUDY ON POLYPHENOLS CONTENT, CAPSAICIN AND ANTIOXIDANT ACTIVITY OF DIFFERENT HOT PEPPERS VARIETIES (CAPSICUM ANNUUM L.) UNDER ENVIRONMENTAL CONDITIONS OF THESSALY REGION, GREECE CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 9 Issue: 1 Pages: 109-116 Published: 2017
- Gougoulias, Nikolaos; Vagelas, Ioannis; Wogiatzi, Eleni; Giurgiulescu Liviu et al., COMPARATIVE STUDY ON POLYPHENOLS CONTENT AND ANTIOXIDANT EFFECT OF OLIVE CULTIVARS FROM THE ISLAND PAROS, GREECE CARPATHIAN JOURNAL OF FOOD SCIENCE AND TECHNOLOGY Volume: 9 Issue: 1 Pages: 144-151 Published: 2017
- L. Giurgiulescu, I. Vagelas, and N. Gougoulias, "Research regarding the influence of Penicillium chrysogenum, Penicillium expansum and Phanerochaete spp. on chemical composition of red wines", *Romanian Biotechnological Letters*, vol. 21, pp. 11290-11297, Mar-Apr 2016.
- Cical, Elena; Mihali, Cristina; Mecea, Mircea; Dumuta Anca et al., CONSIDERATIONS ON THE RELATIVE EFFICACY OF ALUMINUM SULPHATE VERSUS POLYALUMINUM CHLORIDE FOR IMPROVING DRINKING WATER QUALITY, STUDIA UNIVERSITATIS BABES-BOLYAI CHEMIA Volume: 61 Issue: 2 Pages: 225-238 Published: 2016
- N. Gougoulias, L. Giurgiulescu, D. Kalfountzos, A. Papachatzis, I. Vagelas, D. Ftakas, et al., "COIR EMPLOYED AS SOILLESS CULTIVATION SUBSTRATE AND ITS INTERFERENCE WITH NUTRIENT SOLUTION DURING TWO TOMATOES CROPPING PERIODES (CASE STUDY)", *Studia Universitatis Babes-Bolyai Chemia*, vol. 60, pp. 177-185, Jun 2015.
- A. Dumuta, Z. Vosgan, M. Jelea, F. Pop, T. Dippong, L. Mihalescu, C. Mihali, “Microbiological Aspects Considering the Production of Nutraceutical Curd Containing Onion”, *Animal Science and Biotechnologies*, Vol.49, nr.2, pp.40-45, 2016.
- Nikolaos Gougoulias, Liviu Giurgiulescu, Ioannis Vagelas, Eleni Wogiatzi, Maria Nektaria Ntalla,(2017) Phenol Content and Antioxidant Activity of Greek Table Olive Cultivar Amfissis During Maturation, Studia Universitatis Babes-Bolyai, Chemia, Tom2, pp. 387-396

The offer addressed to the economic environment

Consulting	Implementation of quality management systems in enterprises of food industry
Training	Education and training in the HACCP; VACCP and TACCP 
Research & development	**Microbiology analyses: *Salmonella, E. coli, Campylobacter, Enterobacteriaceae, Listeria monocytogenes, NTG, NCS, Moulds and Yeasts detection, Bacillus cereus, Coliform bacteria, Staphylococcus aureus.*** **Research and development in food industry and quality control and food safety** **Dairy industry:** - Researching the possibility of replacing the classical method of pasteurization with unconventional methods, like microwave technology, microfiltration technique or the use of high pressure. **Food biotechnology** - Wine biotechnology; Beer biotechnology; Dairy products biotechnology; - Enzymes application in new food products.

EARTH SCIENCES, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT RESEARCH CENTER

Contact details

Name	**Earth Sciences, Environment and Sustainable Development Research Center**
Acronym	**ESESD**
Logo	
Site	http://sm.ubm.ro
Address	Victor Babes Street, 62/A
Faculty Department	**Faculty of Sciences, Chemistry and Biology Department**
Telephone	+40 0262 218922/116, +40 741940088
Fax	+40 0262 276153
Director	Prof. Dr. Gheorghe Damian
e-mail	damgeo@ubm.ro

Areas of expertise

Risk assessment of geomorphologic, climatic and soil natural hazards.
Polluted soil geochemical surveys and mapping the distribution of heavy metals. Soil remediation by conventional methods and the use of natural resources.
Determining the degree of pollution of the environment factors like soil and water.
Research of zeolite tuff by optical methods and X-ray diffraction. The use of zeolite tuff in environmental protection for the restoration and petrography geology studies on rocks and minerals by using optical methods, X-ray diffraction analysis and electron microprobe. Metalogenetic studies for research perimeters of mineral resources.
GIS database - making vector and raster files.
GIS modeling for surface erosion, landslides and flooding simulators.

Team

Prof. Dr. Gheorghe Damian, Prof. Dr. Floarea Damian, Assoc. Prof. Dr. Gheorghe Macovei, Assist. Prof. Daniel Nasui,

Representative projects

"Correlations between the structure of naturally occurring, locally available, nano-/ microscale bentonite minerals and their physico-chemical properties" – ANCS-DUBNA, 2018
"Development of methods of stabilization and rehabilitation of soils polluted with heavy metals using zeolite resources", CNCSIS Grant, (2006-2008)
"Telluride and selenide bearing gold-silver deposits", UNESCO-IUGS IGCP 486 Grant, (2003-2008)
"Minerals in the system Au-Ag-Bi-Ag-X and X where X = S, Se, Te are indicators of chemical and physical parameters of genesis for epithermal deposits", Institute of geology of ore deposits, petrology, mineralogy, and geochemistry from the Russian Academy of Sciences (IGEM RAS), (2008-2009)
"Measurements with organic tracers to establish sanitary protection zones in the Băile Oglinzi area, Tg. Neamţ", (2009)
"Mineralogy and petrography studies on samples from the Rovina perimeter", Samax, (2008)
"Mineralogical study of samples from the Cireşata mineralization - Valea Gărzii, Brad" (2010)
"Mineralogy and petrography study based on evidence collected from boreholes made in Poprad perimeter, Maramures", ROMALTYN SA Company, (2010)

Significant results

The most representative publications of the past 5 years:

1. Damian, Gheorghe; Andras, Peter; Damian, Floarea; et al., The role of organo-zeolitic material in supporting phytoremediation of a copper mining waste dump INTERNATIONAL JOURNAL OF PHYTOREMEDIATION Volume: 20 Issue: 13 Pages: 1307-1316 Published: NOV 10 2018
2. Damian, Gheorghe; Lanzerstorfer, Christof; Damian, Floarea; et al., Distribution of Heavy Metals and Minerals in the Various Size Fractions of Soil from CopE (TM) a Mic, RomAnia WATER AIR AND SOIL POLLUTION Volume: 229 Issue: 6 Article Number: 202 Published: JUN 2018
3. Apopei, A. I.; Damian, G.; Buzgar, N.; et al., The determination of the Sb/As content in natural tetrahedrite-tennantite and bournonite-seligmannite solid solution series by Raman spectroscopy MINERALOGICAL MAGAZINE Volume: 81 Issue: 6 Pages: 1439-1456 Published: DEC 2017

4. Buzatu, Andrei; Damian, Gheorghe; Buzgar, Nicolae; et al., Structural key features of bismuth and Sb-As sulfosalts from hydrothermal deposits-micro-Raman spectrometry VIBRATIONAL SPECTROSCOPY Volume: 89 Pages: 49-56 Published: MAR 2017
5. Apopei Andrei Ionuț, Damian Gheorghe, Buzgar Nicolae, Buzatu Andrei, "Mineralogy and geochemistry of Pb–Sb/As-sulfosalts from Coranda-Hondol ore deposit (Romania) - Conditions of telluride deposition", *Ore Geology Reviews* 72 (2016) 857–873, 2016.
6. Andrei Buzatu, Harald G. Dill, Nicolae Buzgar, Gheorghe Damian, Andreea Elena Maftei, Andrei Ionu Apopei, "Efflorescent sulfates from Baia Sprie mining area (Romania) — Acidmine drainage and climatological approach", *Science of the Total Environment*, 542 (2016) 629–641, 2016.
7. M. Chicos, G. Damian, D. Stumbea, N. Buzgar, T. Ungureanu, V. Nica, G. Iepure, "Mineralogy and Geochemistry of the Tailings Pond from Straja Valley (Suceava County, Romania). Factors Affecting the Mobility of the Elements on the Surface of the Waste Deposit", *Carpathian Journal of Earth and Environmental Sciences*, Vol.11, nr.1, pp.265-280, 2016.
8. I. A. Baksheev, F. Damian, G. Damian, V. Y. Prokofiev, I. A. Bryzgalov, and L. I. Marushchenko, "CHEMICAL COMPOSITION OF PHLOGOPITE, TOURMALINE AND ILLITE FROM HYDROTHERMAL ALTERATIONS OF THE NISTRU DEPOSIT, BAIA MARE, ROMANIA", *Carpathian Journal of Earth and Environmental Sciences*, vol. 11, pp. 547-564, Aug 2016.
9. Buzatu, Andrei; Damian, Gheorghe; Dill, Harald G.; Buzgar, Nicolae; Apopei, Andrei I., "Mineralogy and geochemistry of sulfosalts from Baia Sprie ore deposit (Romania) - New bismuth minerals occurrence", *Ore Geology Reviews*, Volume: 65, Pages: 132-147, Part: 1, DOI: 10.1016/j.oregeorev.2014.09.016 Published: MAR 2015.
10. Andrei Ionut Apopei, Gheorghe Damian, Nicolae Buzgar, Stanislava Milovska & Andrei Buzatu, "New occurences of hessite, petzite and stützite at Coranda-Hondol open pit (Certej gold-silver deposit, Romania)", *Carpathian Journal of Earth and Environmental Sciences*, May 2014, Vol. 9, No. 2, p. 71 – 78
11. Cristiana L. Ciobanu, Joël Brugger, NigelJ. Cook, Stuart J. Mills, Peter Elliott, Gheorghe Damian and Floarea Damian, Graţianite, "MnBi2S4, a new mineral from the Băiţa Bihor skarn, Romania", *American Mineralogist*, Volume 99, pages 1163–1170, 2014.
12. Andrei I. Apopei, Nicolae Buzgar, Gheorghe Damian, Andrei Buzatu, 2014, "The raman study of weathering minerals from the Coranda-Hondol open pit (Certej gold-silver deposit) and their photochemical degradation products under laser irradiation", *The Canadian Mineralogist,* Vol. 52, pp. 1027-1038 (2014), DOI: 10.3749/canmin.1300054
13. I. Ianos, D. Peptenatu, G. Damian, R.-D. Pintilii, G. S. Gheorghe, "A new hypothesis to explain the unique spatial distribution of Balkan endemic nephropathy", in *Carpathian Journal of Earth and Environmental Sciences*, vol. 8, no. 1, 2013, pp. 199-206
14. A. Buzatu, N. Buzgar, G. Damian, V. Vasilache, A. I. Apopei, "The determination of the Fe content in natural sphalerites by means of Raman spectroscopy", in *Vibrational Spectroscopy*, vol. 68, 2013, pp. 220-224
15. V. B. Naumov, V. A. Kovalenker, V. Yu. Prokofiev, M. L. Tolstykh, G. Damian, F. Damian, in *Geochemistry International*, vol. 51, no. 11, 2013, pp. 876-888
16. F. Damian, G. Damian, R. Lăcătușu, C. Postolache, G. Iepure, M. Jelea, D. Năsui, "The heavy metals immobilization in polluted soils from Romania by the natural zeolites use", in *Carpathian Journal of Earth and Environmental Sciences*, 2013, vol. 8. no. 4, pp. 231-250
17. Ioana CHIRA, Gheorghe DAMIAN & Răzvan CHIRA, "Spatial distribution of heavy metals in the soils of Băiuţ Area, Maramureş County, Romania", *Carpathian Journal of Earth and Environmental Sciences*, February 2013, Vol. 8. No. 4, 296-278

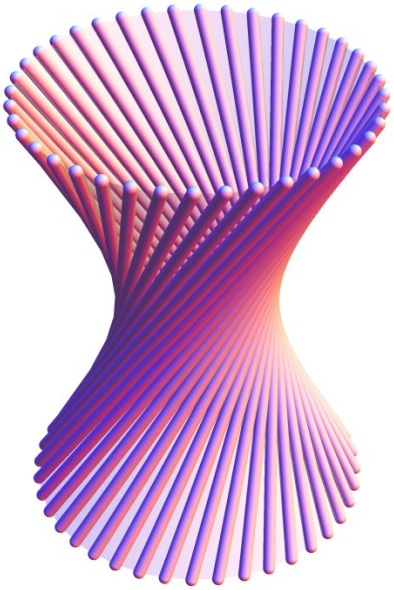
The offer addressed to the economic environment

Research & development	National mineralogy heritage and mineral resources investigation. Risk assessment of natural geomorphologic, climatic and soil hazards. GIS databases creation (vector and raster) GIS modeling for surface erosion (USLE – The universal soil erosion model), landslides (SHALSTAB, SMORPH) and flood simulation (HEC-RAS).
Consulting	The use of rocks and natural zeolites, soil type determinations. Using GIS in the creation and management of databases and in the risk assessment of natural and anthropogenic hazards. Paleontological determinations, determination of the anthropogenic pressure, management of protected areas, the use of thematic maps. Determination of sanitary blocks through the use of organic tracer method
Training	Using GIS in the creation and management of databases and in the risk

RESEARCH CENTER FOR APPLIED MATHEMATICS IN ENGINEERING SCIENCES

Contact details

Name	**Research Center for Applied Mathematics in Engineering Sciences**
Acronym	**RAMSES**
Logo	RAMSES
Site	https://research.utcluj.ro/tl_files/research/Research%20Domain/Matematica-Informatica/RAMSES_Ivan.pdf
Address	25 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Mathematics Department**
Telephone	+40 264 401261, +40 264 401539
Fax	
Director	Prof. Dr. Math. Mircea Ivan
e-mail	Mircea.Ivan@math.utcluj.ro



Areas of expertise

Numerical Analysis
-New methods and tools in Approximation Theory; Application of *MATHEMATICA*'s aproximation subroutines; High degree quadrature formulas; New algorithms for energy-minimizing curves and surfaces
Functional, Differential and Integral Equations and Calculus of Variations
-Existence and representation of single-valued and multivalued solutions. Hyers-Ulam stability of equations in algebraic and topological structures; Applications to the stability and perturbations of Dynamical Systems.
-Generalized equations of Euler-Lagrange and Euler-Gauss type used in the theory of 2D and 3D deformable models
Geometry
-Geometry of image formation in stereo vision, different camera models, calibration, system of multiple lenses and mirrors of specific type; Manifold learning and pattern recognition
Operator theory and Special functions
-Multivalued operator theory which is about the investigation of the fixed point properties of special multivalued operators; Investigating the properties of special functions, Riemann zeta, Hurwitz zeta and Polylogarithm functions
Modelling
-Ultrasound echocardiography; Computer-aided surgery (Prosthetic medicine); Dynamic image based modelling
Nonlinear and Convex Analysis and Mathematical Programming/Optimization
-Equilibrium problems; Optimization; Variational inequalities; Numerical Optimization; Numerical Optimization

Team

Prof. Dr. Math. Mircea Ivan; Prof. Dr. Math. Ioan Gavrea; Prof. Dr. Math. Ioan Raşa; Prof. Dr. Math. Alexandru Ioan Mitrea; Prof. Dr. Math. Dorian Popa; Prof. Dr. Math. Daniela Rosca; Prof. Dr. Math. Ioan Radu Peter; Assoc. Prof. Dr. Math. Daniela Inoan; Prof. Dr. Math Alina Sîntămărian; Assoc. Prof. Dr. Math. Dalia Cimpean; Prof. Dr. Math. Bogdan Ionuţ Gavrea; Assoc. Prof. Dr. Math. Adela Novac; Assoc. Prof. Dr. Math. Mircea Dan Rus; Assoc. Prof. Dr. Math. Ovidiu Furdui; Assoc. Prof. Dr. Math. Adrian Holhos; Assoc. Prof. Dr. Math. Adela Capătă

Representative projects

DynAPSNeur, "Dynamics Analysis of Parallel Simulations of Biological Neural Microcircuits", FP7 "Research Infrastructures" action (January 1 - December 30, 2013)
http://www.hp-see.eu/hp-see-pilot-call-awarded-applications
MoDef, "Modelling using advanced methods and techniques based on the theory of deformable surfaces with applications in computer assisted surgery and other modelling procedures of anatomic structures", PNII Partnership, http://dicomge.utcluj.ro/modef (2007-2010)
"Advanced Methods and Algorithms of Mathematics related to the Theory of Deformable Models, with applications in image processing and medicine", CNCSIS, (2006-2008)
"Denoising and compression of data on high-dimensional manifolds", Deutsche Forschung Gemeinschaft, Bilateral cooperation Germania – Romania PL 170/14-1, Georg Austin University, Göttingen, (January 1 - December 31, 2011)
"Denoising and compression of spherical data", *Deutsche Forschung Gemeinschaft* (2007 –2010),

DESPED, **"Stereo Based Object Tracking and Pedestrian Recognition in Traffic and Environments"**, *Wolkswagen AG*, Germania (2006-2007) , (coord. professor Sergiu Nedevschi).
CRIOLAPSIM, **"Laparoscopic Cryosurgical Treatment of the renal tumors individualized using simulations on 3D reconstructed model"**, *CEEX* (2006-2008) director TUCN prof. dr. eng. Sergiu Nedevschi (in cooperation with "Institutul Clinic de Urologie şi Transplant Renal" Cluj-Napoca

Significant results

The most representative publications of the last years

1. Ivan, M., Neagos, V., A representation of the interpolation polynomial, Numerical Algorithms 88 (2021), 1215—1231, https://doi.org/10.1007/s11075-021-01072-2}
2. Holhoș, A., On the Approximation by Balázs–Szabados Operators. Mathematics (2021) 9 (14), 1588, 12 pp. doi: 10.3390/math9141588
3. Gupta, V., Holhoș, A., Approximation with Arbitrary Order by Baskakov-Type Operators Preserving Exponential Functions. Bulletin of the Malaysian Mathematical Sciences Society (2021) 44, 2567-2576. doi: 10.1007/s40840-020-01063-x
4. A. Holhoș, D. Roșca, Orhonormal Wavelet Bases on The 3D Ball Via Volume Preserving Map from The Regular Octahedron. Mathematics (2020) 8 (6), 994, 15 pp. doi: 10.3390/math8060994
5. Ana Maria Acu, Ioan Raşa, Rekha Srivastava, Modified operators interpolating at endpoints, Mathematics 2021, 9(17), 2021; https://doi.org/10.3390/math9172051
6. Ana Maria Acu, Gülen Başcanbaz-Tunca, Ioan Rasa, Voronovskaja type quantitative results for differences of positive linear operators, Symmetry 2021, 13(8), 1392; https://doi.org/10.3390/sym13081392
7. Ulrich Abel, Dany Leviatan and Ioan Rasa, On the q-monotonicity preservation of Durrmeyer-Type operators, Mediterranean Journal of Mathematics volume 18, Article number: 173 (2021) , https://doi.org/10.1007/s00009-021-01823-4
8. Capătă, A, Existence of solutions of bilevel strong vector equilibrium problems and their applications, J Nonlinear Var Anal (2021), 5 (3), 371-389, doi: 10.23952/jnva.5.2021.3.03
9. Novac, A., Otrocol, D. & Popa, D. Ulam Stability of a Linear Difference Equation in Locally Convex Spaces. Results Math 76, 33 (2021). https://doi.org/10.1007/s00025-021-01344-2
10. Veronica Ilea, Adela Novac, Diana Otrocol, Radu Precup, Solutions with a prescribed interval of positivity for differential systems with nonlocal conditions, Applied Mathematics and Computation 375, 125092, https://doi.org/10.1016/j.amc.2020.125092.
11. Cimpean, D.S., Sheremet, M.A., Pop, I., Mixed convection of hybrid nanofluid in a porous trapezoidal chamber, International Communications in Heat and Mass Transfer, ISSN: 0735-1933, 116 (2020) 104627, https://doi.org/10.1016/j.icheatmasstransfer.2020.104627
12. Sheremet, M.A., Cimpean, D.S., Pop, I., Thermogravitational Convection of Hybrid Nanofluid in a Porous Chamber with a Central Heat-Conducting Body, Symmetry, ISSN: 2073-8994, 12, 593 (2020); doi: 10.3390/sym12040593
13. Cimpean, D.S., Pop, I., Entropy generation of a nanofluid in a porous cavity with sinusoidal temperature at the walls and a heat source bellow, International Journal of Numerical Methods for Heat & Fluid Flow, (2021)Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/HFF-10-2020-0654.
14. AR Baias, F Blaga, D Popa, Best Ulam constant for a linear difference equation, Carpathian J Math., 35 (2019), No. 1, 13 – 22.
15. 13.Baias, A.R., Popa, D.: On Ulam stability of a linear difference equation in Banach spaces. Bull. Malays. Math. Sci. Soc. (2019). https://doi.org/10.1007/s40840-019-00744-6, 16
16. Capata, A. Optimality conditions for ϵ -quasi solutions of optimization problems via ϵ -upper convexificators with applications. Optim. Lett. 13, 857-873 (2019) doi: 10.1007/s11590-018-1287-117
17. Capata, A. Optimality for weakly ϵ -efficient solutions of vector optimization problems with applications. Numer.Funct. Anal. Optim.. 40, 726-741 (2019) doi:10.1080/01630563.2019.1571510
18 Cimpean D. S, Revnic C., Pop I., Natural Convection in a Square Inclined Cavity Filled with a Porous Medium with Sinusoidal Temperature Distribution on Both Side Walls, Transport in porous media, Volume: 130 Issue: 2 Pages: 391-404, DOI: 10.1007/s11242-019-01315-w, Published: NOV 2019
19 Cimpean Dalia Sabina, Pop Ioan, Free convection in an inclined cavity filled with a nanofluid and with sinusoidal temperature on the walls: Buongiorno's mathematical model, International journal of numerical methods for heat & fluid flow, Volume: 29 Issue: 12 Pages: 4549-4568, DOI: 10.1108/HFF-04-2019-0317, Published: DEC 2 2019
20 B. Gavrea, On a convexity problem in connection with some linear operators, Journal of Mathematical Analysis and Applications, Volume 461, Issue 1, 319-332, 2018. doi:10.1016/j.jmaa.2018.01.010

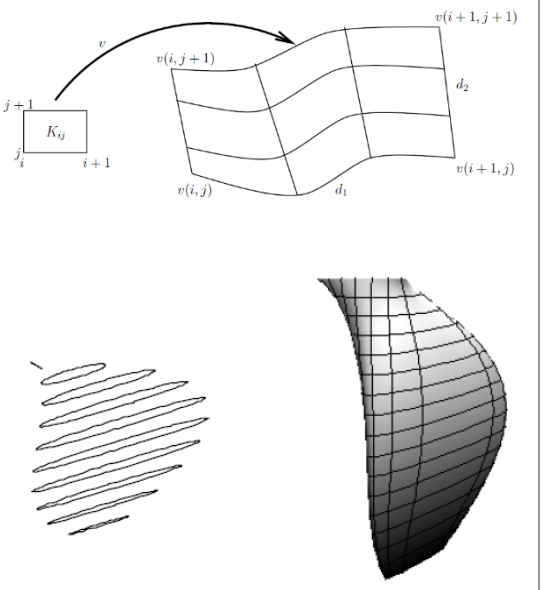
The offer addressed to the economic environment

Research & development	Development of original solutions for modelling dynamic 3D environments; Development of real-time perception systems for structured or unstructured 3D environments, applied to driving assistance systems, autonomous robots, space observation, or computer assisted medical diagnosis.
Consulting	Consulting, design, research in pattern recognition, machine learning for industrial and scientific fields.
Training	Image processing basics: Image processing algorithms and techniques, pattern recognition, machine learning, kernel methods with applications in different fields (computer vision, neuroscience, medical, speech recognition); Numerical optimization algorithms, time stepping schemes for rigid body systems with applications to robotics, autonomous navigation and granular materials.

APPROXIMATION METHODS AND CALCULUS OF VARIATIONS IN DEFFORMABLE MODELS APPLIED IN IMAGE PROCESSING AND COMPUTER ASSISTED MEDICINE - RESEARCH LABORATORY

Contact details

Name	**Approximation methods and Calculus of Variations in Deformable Models applied in Image Processing and Computer Assisted Medicine – Research Laboratory**
Acronym	**LC MoDef**
Logo	LC MoDef
Site	http://dicomge.utcluj.ro/modef
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of Automation and Computer Science Department of Mathematics**
Telephone	+40 264 401222
Fax	+40 264 401261
Director	Prof. Dr. Math. Alexandru I. Mitrea
e-mail	Alexandru.Ioan.Mitrea@math.utcluj.ro



Areas of expertise

LC MoDef research laboratory is devoted to the development of the mathematical basis of the theory of deformable models and to the applications of this theory in image processing and medical imaging, involving the following areas of expertise:
- Differential Equations
- Calculus of Variations
- Geometry
- Numerical Analysis
- Probabilities
- Modelling & Simulation
- Medical Imaging (Ultrasonography, CT, MRI)
- Digitization based on mathematical models applied in the medical field

Team

Prof. Dr. Math. Alexandru I. Mitrea; Prof. Dr. Math. Dumitru Mircea Ivan; Assoc. Prof. Dr. Math. Daniela Inoan; Assoc. Prof. Dr. Math. Radu Peter, Senior Lect. Dr. Mircia Gurzau

Representative projects

MoDef, "Modelling using advanced methods and techniques based on the theory of deformable surfaces with applications in computer assisted surgery and other modelling procedures of anatomic structures", PN II 11018-Partenership, http://dicomge.utcluj.ro/modef (2007-2010)
Advanced Methods and Algorithms of Mathematics related to the Theory of Deformable Models, with applications in image processing and medicine, Grant CNCSIS 1255, 2006-2008

Significant results

The most representative publications of the past 5 years:

1. Mitrea Alexandru Ioan, Remarks on using some Finite Difference Schemes to provide energy minimizing snakes, The 16-th International Conference on Applied Mathematics and Computer Science, July 3-6, 2019
2. Mitrea, Alexandru I., On the dense unbounded divergence of interpolatory product integration on Jacobi nodes CALCOLO Volume: 55 Issue: 1 Article Number: UNSP 10 Published: MAR 2018
3. Peter, Ioan Radu, A Bound of the Finslerian Ricci Scalar MEDITERRANEAN JOURNAL OF MATHEMATICS Volume: 15 Issue: 3 Article Number: 143 Published: JUN 2018
4. Inoan, Daniela Ioana; Kolumban, Jzsef, Existence Theorems for Inequality Systems BULLETIN OF THE IRANIAN

MATHEMATICAL SOCIETY Volume: 44 Issue: 5 Pages: 1329-1336 Published: OCT 2018
5. Inoan, D.; Kolumban, J., Existence theorems via duality for equilibrium problems with trifunctions OPTIMIZATION Volume: 67 Issue: 5 Pages: 537-547 Published: 2018
6. Inoan, D.; Kolumban, J., On Quasi-Equilibrium Problems with Trifunctions MINIMAX THEORY AND ITS APPLICATIONS Volume: 3 Issue: 1 Pages: 161-172 Published: 2018
7. Inoan, Daniela, Variational relations problems via fixed points of contraction mappings JOURNAL OF FIXED POINT THEORY AND APPLICATIONS Volume: 19 Issue: 2 Pages: 1571-1580 Published: JUN 2017
8. Anastasiei, Mihai; Kozma, Laszlo; Peter, Ioan Radu, Some applications of index form in Finsler geometry PUBLICATIONES MATHEMATICAE-DEBRECEN Volume: 90 Issue: 3-4 Pages: 455-469 Published: 2017
9. Mitrea, Alexandru I., On the dense divergence of the product quadrature formulas of interpolatory type JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 433 Issue: 2 Pages: 1409-1414 Published: JAN 15 2016
10. I. R. Peter and C. Pintea, "Necessary Conditions for Finite Critical Sets. Maps with Infinite Critical Sets", *Topological Methods in Nonlinear Analysis*, vol. 47, pp. 739-749, Jun 2016.
11. D. Marian, I. R. Peter, and C. Pintea, "Operations with monotone operators and the monotonicity of the resulting operators," *Monatshefte Fur Mathematik*, vol. 181, pp. 143-168, Sep 2016.
12. A.I Mitrea, S.Nedevschi, D. Mitrea, P. Mitrea, R. Badea: “Diseased Tissue Area Detection and Delimitation, by Fusion between Finite Difference Methods and Textural Analysis”, *IEEE International Conference on Automation, Quality and Testing, Robotics 2014*, pp.305-310.
13. Ioana Chifor, Alexandru I. Mitrea, Iulia Clara Badea, Radu Chifor, Mindra Eugenia Badea, Paulina Mitrea, Sever Popa, Maria Crisan, Ramona Avram, “Mathematical Methods for Assessing the Prognostic of Fixed Partial Dentures Resulting from Evaluating a Group of Dental Patients in Romania”, *Computational and Mathematical Methods in Medicine*, Volume 2014 (2014), Article ID 984901, 11 pages
14. A. I. Mitrea: “On the dense unbounded divergence of the discrete best approximation”, *Taiwanese Journal of Mathematics*, vol.18, no.4(2014), 1119-1127, DOI:10.11650/tjm.18.2014.3743

Significant solutions:
Considering until now parametric (variational) deformable models, we developed an iterative method based on finite difference schemes in order to solve numerically the ELP equation of Calculus of Variations, which provides the energy minimizing snake; we derived estimates concerning the approximation error related to the corresponding ELP algorithm and we established conditions for its convergence and stability; as future targets, we intend to consider probabilistic models which offer an alternative approach by using the Bayes technique, as well as geometric deformable models which provide an efficient alternative to address some limitation of parametric deformable models.

Products and technologies:
1. Mathematical study concerning the deformable model theory: energy functional, evolution equation, discretization methods
2. Stochastic Modelling and Simulation Platform/Implemented in Java/
3. 3D Deformable Surfaces Modelling Software Environment

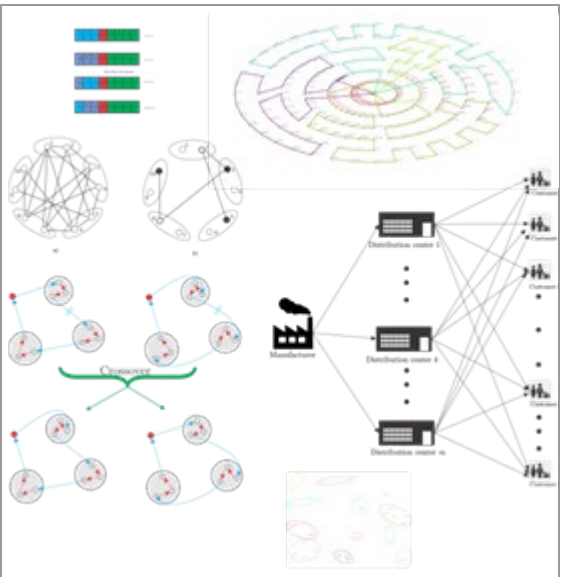
The offer addressed to the economic environment

Research & development	Generating performing mathematical algorithms in order to obtain the minimizing-energy curves and surfaces. Finding approximation error, convergence rate and giving consistency and stability conditions concerning these algorithms **.**
Consulting	Consulting in finding suitable algorithms to obtain minimizing-energy curves and surfaces, which assist activities in medicine, industrial environments, modern traffic infrastructure, physics
Training	**Deformable models theory:** reveal of the interdisciplinary value of the domain**,** connections with practical problems of medicine, image processing, and physics**;** knowledge confluence from functional analysis, approximation theory, differential equations, differential geometry, calculus of variations, numerical analysis, linear algebra, and probability theory**.** **Model-based approach:** integrating computer-assisted medical image analysis, their applications at this level including image segmentation, shape representation and motion tracking.

INTELLIGENT METHODS FOR SOLVING OPTIMIZATION PROBLEMS

Contact details

Name	**Intelligent Methods for Solving Optimization Problems**
Acronym	**sIMONE**
Logo	sIMONE
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Matematica-Informatica/1_Pop-Sitar.pdf
Address	76 Victoriei Street, Baia Mare, Romania
Faculty Department	**Faculty of Sciences** **Mathematics and Computer Science Department**
Telephone	+40 262 276059
Fax	+40 026 2275368
Director	Prof. Dr. Petrica Pop Sitar
e-mail	petrica.pop@ubm.ro



Areas of expertise

Combinatorial Optimization
- Complexity aspects; Mathematical modelling; Exact approximation, heuristic and hybrid algorithms; Relaxation techniques

Metaheuristic Algorithms
- Genetic algorithms; Ant colony optimization; Variable neighborhood search; Memetic algorithms; Hybrid algorithms

Team

Prof. Dr. Petrica Pop Sitar, Prof. Dr. Oliviu Matei, Assoc. Prof. Dr. Corina Pop Sitar, Assoc. Prof. Dr. Andrei Horvat Marc, Assoc. Prof. Dr. Ovidiu Cosma, Assoc. Prof. Dr. Camelia Pintea, Assoc. Prof. Dr. Ioana Zelina, Lecturer Dr. Cosmin Sabo, Lecturer. Dr. Mara Hajdu- Macelaru

Representative projects

"Collaborative Environment for Design of AmI enhanced Product-Services Integrating Highly Personalized Innovative Functions with Minimal Ecological Footprint along Life Cycle and of their Production ", ProSeCo, European FP7 project, http://proseco-project.eu/ (2013-2017)
"New hybrid metaheuristic methods for solving network design problems", PN-II-RU-TE-2011-3-0113, www.cunbm.utcluj.ro/meta-hibrid, 2011-2014.
"Hybrid Bi-level Optimization Approaches for Generalized Network Design Problems", bilateral project Romania – Austria, 2014-2015
"Selective graph coloring problem", grant PHC Bosphore 26284RB, EGIDE, 2012-2013.
"Research, development and implementation of organizing the documents", ANCS, 2010-2013.
"Algorithmical methods for solving combinatorial optimization problems", project CEEX, ET34, 2006-2008, http://ceex-et34.ubm.ro

Significant results

The most representative publications of the past 5 years:

1. P.C. Pop, The generalized minimum spanning tree problem: an overview of formulations, solution procedures and latest advances, European Journal of Operational Research, (I.F.=3.806), Vol. 283(1), pp. 1-15, 2020.
2. O. Cosma, D. Danciulescu and P.C. Pop, On the two-stage transportation problem with fixed charge for opening the distribution centers, (I.F.=4.098), IEEE Access, Vol. 7(1), pp. 113684-113698, 2019.
3. Pintea, C.-M., Calinescu, A., Pop Sitar, C., Pop, P.C., Towards secure & green two-stage supply chain networks, Logic Journal of the IGPL, (I.F.=0.609), Vol. 27(2), pp. 137-148, 2019.

4. O. Cosma, P.C. Pop and C. Pop Sitar, An efficient iterated local search heuristic algorithm for the two-stage fixed-charge transportation problem, Carpathian Journal of Mathematics, (I.F.=0.488), Vol. 35(2), pp. 153-164, 2019.
5. Pop, Petrica C.; Matei, Oliviu; Sabo, Cosmin; et al., A two-level solution approach for solving the generalized minimum spanning tree problem EUROPEAN JOURNAL OF OPERATIONAL RESEARCH Volume: 265 Issue: 2 Pages: 478-487 Published: MAR 1 2018.
6. P.C. Pop, L. Fuksz, A. Horvat Marc and C. Sabo, A novel two-level optimization approach for clustered vehicle routing problem, Computers & Industrial Engineering, (I.F.=3.518), Vol. 115, pp. 304-318, 2018.
7. A. Horvat Marc, L. Fuksz, P.C. Pop and D. Danciulescu, A decomposition-based method for solving the Clustered Vehicle Routing Problem, Logic Journal of IGPL, Vol. 26(1), pp. 83-95, 2018.
8. P.C. Pop, C. Sabo, B. Biesinger, B. Hu and G. Raidl, Solving the Two-Stage Fixed-Charge Transportation Problem with a Hybrid Genetic Algorithm, Carpathian Journal of Mathematics (I.F.=0.788), Vol. 33, No. 3, pp. 365-371, 2017.
9. J. Suto, S. Oniga and P.C. Pop, Feature analysis to human activity recognition, International Journal of Computers, Communications & Control, Vol. 12, No. 1, pp. 116-130, 2017.
10. Pintea, Camelia-M.; Matei, Oliviu; Ramadan, Rabie A.; et al., A Fuzzy Approach of Sensitivity for Multiple Colonies on Ant Colony Optimization Conference: 7th International Workshop on Soft Computing Applications (SOFA) Location: Arad, ROMANIA Date: AUG 24-26, 2016 , SOFT COMPUTING APPLICATIONS, SOFA 2016, VOL 2 Book Series: Advances in Intelligent Systems and Computing Volume: 634 Pages: 87-95 Published: 2018
11. Chiver, Olivian; Neamt, Liviu; Matei, Oliviu; et al., Utilization of Finite Elements Programs and Matlab Simulink in the Study of a Special Electrical Motor INTERNATIONAL JOURNAL OF ADVANCED COMPUTER SCIENCE AND APPLICATIONS Volume: 8 Issue: 4 Pages: 317-323 Published: APR 2017
12. Matei, Oliviu; Rusu, Teodor; Bozga, Andrei; et al., Context-Aware Data Mining: Embedding External Data Sources in a Machine Learning Process Conference: 12th International Conference on Hybrid Artificial Intelligent Systems (HAIS) Location: Logrono, SPAIN Date: JUN 21-23, 2017 HYBRID ARTIFICIAL INTELLIGENT SYSTEMS, HAIS 2017 Book Series: Lecture Notes in Artificial Intelligence Volume: 10334 Pages: 415-426 Published: 2017
13. O. Matei, D. Contras, P.C. Pop and H. Valean, Design and Comparison of Two Evolutionary Approaches for Automated Product Design, Soft Computing, Vol. 20, Issue 11, pp 4257-4269, 2016.
14. P. Pop, O. Matei, C. P. Sitar, and I. Zelina, "A hybrid based genetic algorithm for solving a capacitated fixed-charge transportation problem", *Carpathian Journal of Mathematics*, vol. 32, pp. 225-232, 2016.
15. S. Jozsef, S. Oniga, P. Pop - Sitar, “Comparison of Wrapper and Filter Feature Selection Algorithms on Human Activity Recognition”, 2016 *6TH INTERNATIONAL CONFERENCE ON COMPUTERS COMMUNICATIONS AND CONTROL (ICCCC)*, Oradea, ROMANIA, pp.124-129, 2016
16. S. Fidanova and P.C. Pop, “An improved hybrid ant-local search search for the partition graph coloring problem”, *Journal of Computational and Applied Mathematics*, Vol. 293, pp. 55-61, doi: 10.1016/j.cam.2015.04.030, Elsevier, 2016.
17. P.C. Pop, C.M. Pintea, C. Pop Sitar and M. Hajdu-Macelaru, “An efficient reverse ditribution system for solving a supply chain network design problem”, *Journal of Applied Logic*, Elsevier, Vol. 13(2), Part A, pp. 105-113, 2015.
18. C.M. Pintea, P.C. Pop and I. Zelina, “Denial jamming attacks on wireless sensor network using sensitive agents”, *Logic Journal of IJPL*, doi: 10.1093/jigpal/jzv046, Oxford University Press, in Press.
19. C.M. Pintea and P.C. Pop, “An improved hybrid algorithm for capacitated fixed-charge transportation problem”, *Logic Journal of IJPL*, doi: 10.1093/jigpal/jzv014, Oxford University Press, Vol. 23(3), pp. 369-378, 2015.
20. O. Matei, P.C. Pop, I. Sas and C. Chira, “An improved immigration memetic algorithm for solving the heterogeneous fixed fleet vehicle routing problem”, *Neurocomputing, Elsevier*, Vol. 150, Part A, pp. 58-66, 2015.

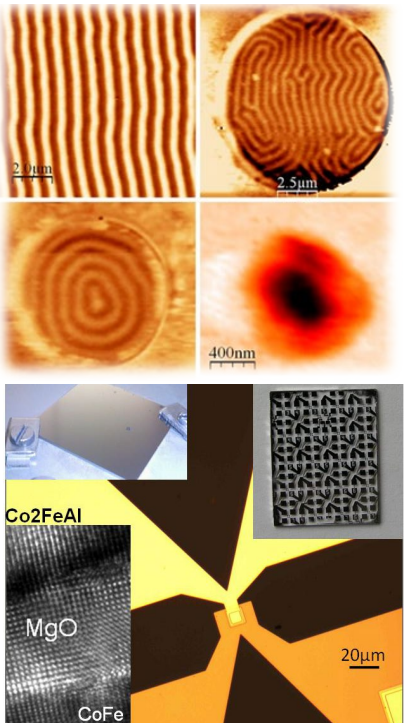
The offer addressed to the economic environment

Research & development in core areas	Elaboration of new intelligent methods for solving complex optimization problems. Development of new nature inspired algorithms based on group intelligence, extension and improving the existent methods and hybridizing the metaheuristic algorithms with exact methods based on integer programming.
Research & development in applied fields	Proposal of new intelligent methods for solving complex optimization problems such as network design problems, facility and location problems, transportation problems, scheduling problems, etc. Document and information flows, indexing of documents, knowledge organization, real time applications.
Consulting	The research team has the necessary abilities for providing the necessary consulting activities to the beneficiaries for implementing the research results in the proposed field of research. These abilities are confirmed by the previously obtained results.

CENTER OF SUPERCONDUCTIVITY, SPINTRONICS AND SURFACE SCIENCE

Contact details

Name	**Center of Superconductivity, Spintronics and Surface Science**
Acronym	**C4S**
Logo	
Site	http://www.c4s.utcluj.ro/
Address	26-28 G. Baritiu Str., 400027, Cluj-Napoca, Romania
Faculty Department	**Faculty of material and environment engineering Physics and Chemistry Department**
Telephone	+40 264 401475, +40 733 274 834
Fax	+40 264 592055
Director	Prof. Dr. Phys. Traian Petrisor
e-mail	traian.petrisor@phys.utcluj.ro



Areas of expertise

SUPERCONDUCTIVITY: new materials and technologies for coated conductors based on YBa2Cu3O7-y (YBCO) fabrication using the Rolling-Assisted-Biaxially-Textured-Substrates approach. Applied research and development efforts include Ni-based biaxially textured tapes processing, deposition of both oxide buffer layers and YBCO films by chemical solution deposition (CSD). **Responsible/contact: traian.petrisor@phys.utcluj.ro**

SPINTRONICS: manipulation of the electron spin in electronic devices. Elaboration and study of new materials, magnetic and nonmagnetic thin film systems, the design and the patterning of individual spintronic devices for applications in the field of sensors, data storage and logic element, fundamental physics, theoretical modeling. **Responsible/contact: coriolan.tiusan@phys.utcluj.ro**

SURFACE SCIENCE. The molecular dynamics at the interface or under confinement conditions inside porous media is investigated using the noninvasive Nuclear Magnetic Resonance (NMR) technique based on diffusometry and relaxometry. The studied samples are: polymeric nano and micro-capsules used as drug carriers, ultra strong concrete, liquids confined inside porous ceramics with controlled amount of magnetic impurities, polymers, liquid crystals, binary mixtures of fluids, ionic liquids, etc. **Responsible/contact: ioan.ardelean@phys.utcluj.ro**

MATERIALS CHEMISTRY. Within this topic the following axes are developed: precursors (synthesis, characterization, single crystal growth, molecular modeling), thin films, nanoparticles and nanostructuring. Using chemical preparation methods (sol-gel) different thin oxide films with a large range of applications in electronics, optics, catalysis, wear resistance, corrosion protection and superconductivity are prepared: La0.66Sr0.33MnO3, La2Zr2O7, YBa2Cu3O7, BaZrO3. Resent research axis concerns nano-lithography using self-assembled polymer templates. **Responsible/contact: lelia.ciontea@chem.utcluj.ro**

Team

Prof. Dr. Phys. Traian Petrisor, Prof. Dr. Lelia Ciontea, Prof. Dr. Coriolan Tiusan, Prof. Dr. Ioan Ardelean, Assoc. Prof. Dr. Gavril Negrea, Assoc. Prof. Dr. Tania Ristoiu, Assist. Prof. Dr. Amalia Mesaros, Assist. Prof. Dr. Phys. Traian Petrisor Jr, Assist. Mihai Gabor, Tech. Razvan Miclea, Res. Assist. Bianca Mos, Res. Assist. Mircea Nasui.

Representative projects

ExNanoMat Supporting excellence in nanotechnology and advanced materials research, PNIII-P1-1.2- 1.2.2 PFE, (2018-2020)
EMERSPIN – "Emerging sensors and data storage spintronic devices based on magnetic tunnel junctions with enhanced efficiency magnetization manipulation" PN-III-P4-ID-PCE-2016-0143, (2017-2019), https://c4s.utcluj.ro/Current%20projects%20-PNIII-ID22-2017.html
EUROTAPES - "European development of Superconducting Tapes: integrating novel materials and architectures into cost effective processes for power applications and magnets", FP6, (2012-2016)
"Unexplored magnetic vortex regimes relevant for fusion applications of superconductors." FP7 - EUROFUSION

Eneabling Project
SPINCOD- "Advanced spintronic devices for communication and data storage technologies based on Heusler compounds" PN-II-RU-TE-2014-4-1820 – SPINCOD (2015-2017)
MAGPIN-"Nano-engineered Magnetic Pinning Centers in High Temperature Superconducting Epitaxial Thin Films", PN-II-RU-TE-2014-4-2848 MAGPIN (2015-2017)
SPINTAIL-"Dispozitive spintronice mezoscopice cu proprietati magnetice si de transport controlate", PN-II-ID-PCE, IDEI (2013-2016)
SPINTRONIC- "Cercetarea si dezvoltarea de dispozitive spintronice la scara mezoscopica", POS-CCE, (2010-2013)
"Efectele dopajului si ale dimensionalitatii asupra proprietatilor magnetice, structurale si morfologice si dinamicii de spin in micro si nanostructuri oxidice feromagnetice", PNI-ID, (2010-2013)
"Nuclear magnetic resonance studies of surface effects on dynamics of molecules confined inside porous media with magnetic impurities", PNII PCE-IDEI, (2011-2016)

Significant results

The most representative publications of the past 5 years:

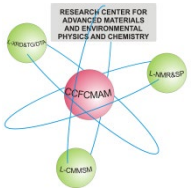
1. Belmeguenai, M.; Roussigne, Y.; Cherif, S. M.; et al., Influence of the capping layer material on the interfacial Dzyaloshinskii-Moriya interaction in Pt/Co/capping layer structures probed by Brillouin light scattering JOURNAL OF PHYSICS D-APPLIED PHYSICS Volume: 52 Issue: 12 Article Number: 125002 Published: MAR 20 2019
2. M Bersweiler, K Dumesnil, Y Fagot-Revurat, P Le Fèvre, C Tiusan, D Lacour and M Hehn, Spin-polarized resonant surface state in (111) Sm1−xGdxAl2, a zero-magnetization ferromagnet JOURNAL OF PHYSICS-CONDENSED MATTER Volume: 30 Issue: 43 Article Number: 435501 Published: OCT 31 2018
3. M Belmeguenai, K Aitoukaci, F Zighem, MS Gabor, T Petrisor Jr, RB Mos, C Tiusan, Investigation of the annealing temperature dependence of the spin pumping in Co20Fe60B20/Pt systems, Journal of Applied Physics 123 (11), 113905 (2018), DOI: https://doi.org/10.1063/1.5011111
4. M. Belmeguenai, M. S. Gabor, F. Zighem, D. Berling, Y. Roussigne, T. Petrisor, et al., "Static and dynamic magnetic properties of Co2FeAl-based stripe arrays", *Journal of Magnetism and Magnetic Materials*, vol. 399, pp. 199-206, Feb 2016.
5. M. S. Gabor, T. Petrisor, R. B. Mos, A. Mesaros, M. Nasui, M. Belmeguenai, et al., "Spin-orbit torques and magnetization switching in W/Co2FeAl/MgO structures", *Journal of Physics D-Applied Physics*, vol. 49, Sep 2016.
6. MS Gabor, M Belmeguenai, T Petrisor Jr, C Ulhaq-Bouillet, S Colis, C Tiusan,"Correlations between structural, electronic transport, and magnetic properties of Co 2 FeAl 0.5 Si 0.5 Heusler alloy epitaxial thin films", *Physical Review B* 92 (5), 054433, 2015;
7. R. B. Mos, M. Nasui, T. Petrisor Jr., M. S. Gabor, R. A. Varga, L. Ciontea, "Synthesis, crystal structure and thermal decomposition of Zr6O4(OH)4(CH3CH2COO)12", in *J of Analytical and Appl. Pyrolysis*, vol. 97, 2012, pp. 137-142;
8. M. Nasui, T. Petrisor. Jr, R.B. Mos, M.S. Gabor, A. Mesaros, F. Goga, L. Ciontea, T. Petrisor, "Fluorine-free propionate route for the chemical solution deposition of YBa2Cu3O7−*x* superconducting films", *Ceramic International* 41, 2015, pp. 4416–4421;

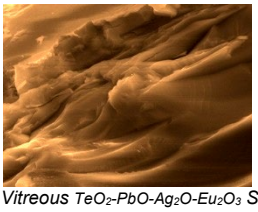
The offer addressed to the economic environment

Research & development	**Superconductivity and materials chemistry** The C4S is developing new materials and technologies for coated conductors using the Rolling-Assisted-Biaxially-Textured-Substrates (RABiTS) approach. Applied research and development efforts include Ni-based biaxially textured tapes processing, deposition of both oxide buffer layers and YBCO films by chemical solution deposition (CSD). **Spintronics,** dealing with the development of sensors and data storage devices based on giant - and tunnelling magneto-resistance systems. We are dealing with the design and the patterning of individual spintronic devices for applications in the field of sensors, data storage, logic elements, high frequency oscillators. Future research axes concern the superconducting spintronics which combines classical spintronics and superconductivity, the spin-orbitronics and the spintronics with graphene. **Surface Science** The NMR laboratory is designed to study molecular dynamics at the interface or under confinement conditions inside porous media; The systems under study are: polymeric nano and micro-capsules used as drug carriers, ultra strong concrete samples, liquids confined inside porous ceramics with controlled amount of magnetic impurities, polymers, liquid crystals, binary mixtures of fluids, ionic liquids, etc.
Consulting	Available for consulting within the following areas: materials science, low temperature systems, thin film elaboration and characterization tools (structural, morphological, magnetic properties), pattering using UV lithography techniques and ion beam/chemical etching, clean room facilities, high vacuum and Ultra High Vacuum deposition tools, chemical elaboration strategies for thin films and nanoparticles, molecular dynamics at the interface or under confinement conditions inside porous media via the non-invasive Nuclear Magnetic Resonance (NMR) technique.
Training	- Participating to high level teachning modules (e.g. master degree): module of nanotechnology and advanced materials. - Participating of C4S members at teaching activities within the TUCN (elementary physics and chemistry classes).

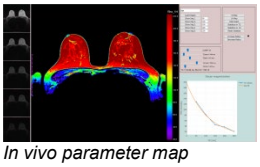
RESEARCH CENTER FOR ADVANCED MATERIALS AND ENVIRONMENTAL PHYSICS AND CHEMISTRY

Contact details

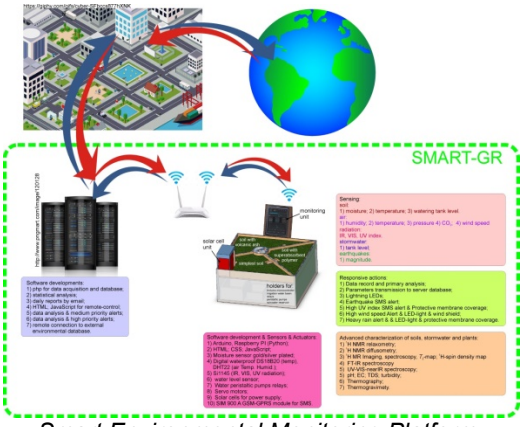
Name	**Research Center for Advanced Materials and Environmental Physics and Chemistry**
Acronym	**CCFCMAM**
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Fizica/2_Culea.pdf
Address	103-105 Muncii Blv., 400641 Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials Engineering and Environmental Engineering** **Physics and Chemistry Department**
Telephone	+40 264 401262, +40 741111149, +40 741770595
Fax	+40 264 595355
Honorary Director	Prof. Dr. Phys. Eugen Culea
e-mail	eugen.culea@phys.utcluj.ro
Executive Director	Prof. Dr. Habil. Phys. Radu Fechete
email	rfechete@phys.utcluj.ro



Vitreous TeO_2-PbO-Ag_2O-Eu_2O_3 SHIMADZU 6000 diffractometer


In vivo parameter map


Bruker NMR MQ 20 Minispec



Smart Environmental Monitoring Platform.

Areas of expertise

Laboratory of Nuclear Magnetic Resonance and Sensors' Physics (https://nmr4.utcluj.ro/; https://erris.gov.ro/Laboratory-of-Nuclear-Magnet)

- ***Structural and dynamic characterization of materials*** (elastomers, various polymers, bio-materials, micro-, nano-hydrogels, PEM membranes, cosmetic materials, construction materials, etc) by measurement of: 1) relaxation times (T_1, T_2, $T_{1\rho}$) and relaxation times distributions; 2) self-diffusion coefficient; 3) dipolar correlation function (MQ); 4) 2D T_1-T_2 , D-T_1, D-T_2 correlation maps and T_2- T_2 exchange maps;
- ***On-line and off line environmental monitoring:*** development of monitoring platforms; detection and measurement of some pollutants spectroscopic methods (IR, UV-Vis, EPR, NMR), sonometry, photometry, specific sensors;
- ***Medical Physics***: *In vivo* MRI, MRs and *f*MRI measurements and *in vitro* biological tissue characterization.
- ***Numeric Analysis and Numeric Modeling*:** Data processing (Image, spectroscopic), Data analysis and interpretation; Statistic analysis (PCA), Molecular Modeling; Spectroscopic modeling (FT-IR, ^{1}H and ^{13}C NMR).

X-Ray Diffraction, TG/DTA and Spectroscopy Laboratory

- ***Structural characterization of materials:*** X-ray diffraction and spectroscopic methods (IR, UV-Vis, EPR) are used to realize the structural characterization of materials (glasses, ceramics, metals, etc.).
- ***Characterization of physico-chemical properties of materials****:* Spectroscopic (IR, UV-Vis, EPR), thermal (TG/DTA) and magnetic investigation methods are used to characterize the physico-chemical properties of materials.

Laboratory of Computational modelling of molecular structures of materials

- Based on spectroscopic experimental data obtained for different materials their molecular structure is achieved by using computational modelling.

Team

Prof. Dr. Phys. Culea Eugen, **Prof. Dr. Radu Fechete**, Assoc. Prof. Dr. Petru Păscuța, Assoc. Prof. Dr. Simona Rada, Prof. Dr. Phys. Dan E. Demco, Prof. Dr. Chem. Elena Maria Pică, Lecturer Dr. Pop Lidia Pop, Lecturer Dr. Liviu Bolunduț, Lecturer. Dr. Maria Bosca, Lecturer Dr. Ramona Chelcea, Lecturer Dr. Dumitrița Moldovan.
Phd students: Phys. Iris Adina Morar; Master Students: Ing. Ramona Crainic, Ing. Lavinia Drăgan.

Representative projects

"**Structure-dynamics-properties relations and aging effects in nanocomposite elastomers and proton exchange membranes"**, (2011-2016):
PN-II-ID-PCE-2011-3-0544; http://www.phys.utcluj.ro/resurse/Cercetare/PNII_ID_307_2011.html;
"**New nanostructured vitreous systems with possible application in the immobilization of nuclear wastes"**, (2009-

2011), PNII-Idei-183/2009:
https://phys.utcluj.ro/resurse/Cercetare/PNII_ID_183_2009_Eng.htm
"Obtaining and characterization of physical and structural properties of some new glasses and glass ceramics doped with 3d and 4f ions with possible applications in electronics and telecommunication", (2009-2011)
PNII-IDEI-532/ 2009, https://phys.utcluj.ro/resurse/Cercetare/PNII_ID_532_2009_En.html
"New tellurate and germanate vitreous systems with applications in telecommunications", (2007-2010):
Parteneriate, https://phys.utcluj.ro/resurse/Cercetare/CNMP_71099_2007.html
MATNANTECH - "**Clustering processes in oxide vitreous systems with 4f ions"**, (2006-2009)
CEEX 47/2006, http://www.phys.utcluj.ro/resurse/Cercetare/CEEX_47_2006.html.
"Nanostructured phases in vitreous systems with 4f ions",
CEEX POSTDOC 1546/2006, http://www.phys.utcluj.ro/resurse/Cercetare/CEEX_1546_2006.html (2006-2009).

Significant results

The most representative publications of the past 5 years:

1. K. H. Tan, D. E. Demco, R. Fechete, A. Pich, Functional selenium modified microgels: temperature-induced phase transitions and network morphology, *Soft matter,* 15 (15), 3227-3240 (2019).
2. M. Rada, A. Popa, S. Rada, A. Bot, E.Culea, Recycled and vanadium-doped materials as negative electrode of the lead acid battery, *J. Sol.State Electrochem.*, 23(17) (2019).
3. S. Rada, E. Culea, M. Rada, Microstructure and mechanical properties of stabilized zirconia ceramics, *Dental Materials*, 35 32, (2019).
4. R. E. David, R. Fechete, S. Sfrangeu, D. Moldovan, R. I. Chelcea, I. A. Morar, F. Stamatian, T. Kovacs, P. Popoi, *In Vivo* ^{1}H Nuclear Magnetic Resonance Spectroscopy and Relaxometry Maps of the Human Female Pelvis, *Analytical Letters*, 52 (1) 54-77 (2019);
5. P. Păşcuţă, L. Pop, R. Stefan, L. Olar, G. Borodi, L. C. Bolundut, E. Culea, The impact of Ag and Cu nanoparticles on optical and magnetic properties of new Tb_2O_3-PbO-TeO_2 glass ceramic system, *Journal of Alloys and Compounds*, 799, 442 (2019).
6. S. Rada, M. L. Unguresan, M. Rada, D.Cuibus, J.Zhang, .Pengfei, R.Suciu, A.Bot, E. Culea, Manganese-Lead-Lead Dioxide Glass Ceramics as Electrode Materials, J. Electrochem.Soc., 166(16): A3987-A3996, (2019).
7. L. Pop, L. Bolunduţ, P. Păşcuţă, E. Culea, Influence of Er^{3+} ions addition on thermal and optical properties of phosphate–germanate system, *Journal of Thermal Analysis and Calorimetry*, 138, 1895 (2019).
8. R. Ștefan, L. C. Bolunduț, L. Pop, G. Borodi, E. Culea, P. Păşcuţă, Copper nanoparticles enhanced luminescence of Eu^{3+} doped lead tellurite glass ceramics, *Journal of Non-Crystalline Solids*, 505, 9 (2019).
9. S. Rada, D. Cuibus, H. Vermesan, M.Rada, E. Culea, Structural and electrochemical properties of recycled active electrodes from spent lead acid battery and modified with different manganese dioxide contents, *Electrochem. Acta*, 332-339 (268) (2018).
10. R. Ștefan, M. Karabulut, A. Popa, E. Culea, L. Bolunduț, L. Olar, P. Păşcuţă, A spectroscopic study of the influence of CuO addition on the ZnO-TeO_2 glass and glass ceramics, *Journal of Non-Crystalline Solids*, 498, 430 (2018).
11. S. Schweizerhof, D. E. Demco, A. Mourran, R. Fechete, M. Moeller, Diffusion of Gold Nanorods Functionalized with Thermoresponsive Polymer Brushes, *Langmuir*, 34, 8031−8041 (2018).
12. L. Bolundut, L. Pop, M. Bosca, G. Borodi, L. Olar, R. Suciu, P. Păşcuţă, E. Culea, R. Stefan, Structural and spectroscopic properties of some neodymium-boro-germanate glasses and glass ceramics embedded with silver nanoparticles, *Ceramics International*, 43, 12232 (2017).
13. L. Bolundut, L. Pop, M. Bosca, N. Tothazan, G. Borodi, E. Culea, P. Păşcuţă, R. Stefan, Structural, spectroscopic and magnetic properties of Nd3+doped lead tellurite glass ceramics containing silver, *Journal of Alloys and Compounds*, 692, 934 (2017).
14. S. Singh, D. E. Demco, K. Rahimi, R. Fechete, J. C. Rodriguez-Cabello, and M. Moller, "Aggregation behaviour of biohybrid microgels from elastin-like recombinamers", *Soft Matter*, vol. 12, pp. 6240-6252, (2016).
15. R. S. Sipos, R. Fechete, D. Moldovan, I. Sus, Z. Pavai, and D. E. Demco, "Ovariectomy-Induced Osteoporosis Evaluated by ^{1}H: One- and Two-Dimensional NMR Transverse Relaxometry", *Applied Magnetic Resonance*, 47, 1419-1437, (2016).

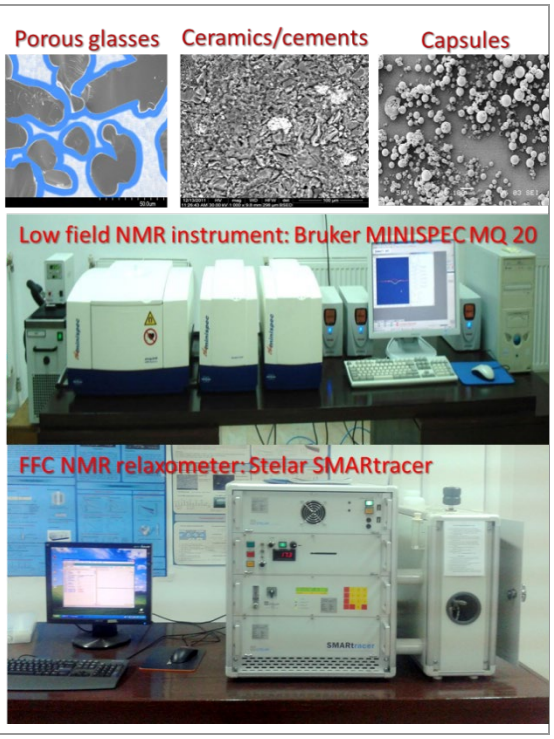
The offer addressed to the economic environment

Research & development	**Characterization of structural and behavioural properties of materials** by using spectrometric and magnetic analysis investigation methods. **Design of advanced models for materials structure** based on spectroscopic data and computational modeling.
Consulting	**Consulting in:** **-spectroscopic and spectrometric analysis methods** (1D and 2D ^{1}H NMR relaxometry and diffusiometry, X-ray diffraction, FT-IR, UV-Vis, EPR); **-environmental monitoring** (sensors/actuators, monitoring platforms, database, data processing, data analysis, sonometry and photometry)**;** **-thermography and thermogravimetry;** **-magnetic measurements.**
Training	Training in using different spectroscopic and spectrometric analysis methods (IR, UV-Vis, EPR, NMR, Thermography), magnetic measurements, sonometry and photometry.

NUCLEAR MAGNETIC RESONANCE DIFFUSOMETRY AND RELAXOMETRY LABORATORY

Contact details

Name	**Nuclear Magnetic Resonance Diffusometry and Relaxometry Laboratory**
Acronym	**NMRDR**
Logo	UTCluj NMR
Site	http://nmr.utcluj.ro
Address	103-105 Bulevardul Muncii, room C001, Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials and Environmental Engineering** **Physics and Chemistry Department**
Telephone	+40 264 401262
Fax	+40 264 595355
Director	Prof. Dr. Ioan Ardelean
e-mail	ioan.ardelean@phys.utcluj.ro



Areas of expertise

In our laboratory we investigate via NMR diffusometry and relaxometry techniques the dynamics of liquid molecules at the interface of porous media and under confinement conditions. The porous media under study have nanometer or micrometer pore sizes and may be fully or partially saturated with fluids. The investigations can be done at different temperatures and resonance frequencies.
The porous systems currently under study are: porous glasses, colloidal crystals, polymeric nanocapsules used in controlled drug delivery, cement-based materials, bone cements, porous ceramics with magnetic impurities, biomaterials with applications in medicine, magnetic nanoparticles used as contrast agents in magnetic resonance imaging.
Other materials which can be studied in our laboratory are: woods, fuel cell membranes, lubricants, fuels, catalysts, zeolites, ionic liquids, liquid crystals, rubber. Using NMR relaxometry and diffusometry techniques in the investigation of fluids confined inside porous media it is possible to extract information about pores dimension and their connectivity.
Other information that can be extracted refers to the ageing and alteration processes of different materials such as rubber, polymers, lubricants or food. In our laboratory we are also interested in developing of new NMR techniques suitable for the investigation of systems with a high content of magnetic impurities (concrete, rocks, soils, different building materials).

Team

Prof. Dr. Ioan Ardelean, Assist. Prof. Dr. Codruța Badea, Ioana Lacan, Alexandru Simedru

Representative projects

CONFLEX - "Developing and testing of a new concrete, with higher flexural strength, obtained through the addition of nanoparticles and organosilane", PN-III-P2-2.1-PED-2016-0719, (2017-2018), https://ped125.weebly.com/
"Nuclear magnetic resonance studies of surface effects on dynamics of molecules confined inside porous media with magnetic impurities", PN-II-ID-PCE-2011-3-0238, https://idei305.weebly.com/ (2011-2016)
"Molecular dynamics during the phase transition of liquids confined inside porous media", Alexander von Humboldt foundation, INSTITUTSPARTNERSCHAFT UTCN-Universitatea Tehnica Ilmenau, Germania (2011-2014)
"NMR studies of molecular dynamics inside polymeric nanocapsules", CEEX MATNANTECH (2006-2008)
"Obtaining and characterization of new target nano-medicines with naftochinonic active substance", PN2-NANOQMED (2007-2010)

Significant results

The most representative publications of the past 5 years:

1. I. Ardelean, R. Kimmich, “Beyond the Limits of Conventional Pulsed Gradient Spin Echo (PGSE) Diffusometry: Generalization of the Magnetization-grating Principle”, in “Diffusion NMR of Confined Systems: Fluid Transport in Porous Solids and Heterogeneous Materials”; Edited by Royal Society of Chemistry 2016; pag. 260-293; DOI:10.1039/9781782623779
2. I. Ardelean, “Applications of Field-cycling NMR Relaxometry to Cement Materials”, in “Field-Cycling NMR Relaxometry: Instrumentation, Model Theories and Applications”, Edited by Royal Society of Chemistry 2018; pag. 462 – 489; http://dx.doi.org/10.1039/9781788012966
3. S. Boboia, M. Moldovan, C. Prejmerean, C. Sarosi, A. Roman, I. Ardelean, Influence of Initiation System and Filler Ratio on the Properties of New Flowable Dental Composites, Materiale Plastice 52, 104-108 (2015).
4. A. Pop and I. Ardelean, Monitoring the size evolution of capillary pores in cement paste during the early hydration via diffusion in internal gradients, Cem. Conc. Res. 77, 76-81 (2015).
5. A. Pop, A. Bede, M.C. Dudescu, F. Popa, I. Ardelean, Monitoring the Influence of Aminosilane on Cement Hydration Via Low-field NMR Relaxometry, Appl. Magn. Reson. 47, 191–199 (2015).
6. A. Bede, A. Scurtu, I. Ardelean, NMR relaxation of molecules confined inside the cement paste pores under partially saturated conditions, Cem. Conc. Res. 89, 56-62 (2016)
7. J. Stepišnik, I. Ardelean, Usage of internal magnetic fields to study the early hydration process of cement paste by MGSE method, J. Magn. Reson. 272, 100-107, (2016). doi: 10.1016/j.jmr.2016.09.013 (can be downloaded here).
8. C. Cadar, C. Cotet, L. Baia, L. Barbu-Tudoran, I. Ardelean, Probing into the mesoporous structure of carbon xerogels via the low-field NMR relaxometry of water and cyclohexane molecules, Microporous Mesoporous Mater., 251, 19-25(2017).
9. A. Cretu, C. Mattea, S. Stapf, I. Ardelean, The effect of silica nanoparticles on the pore structure of hydrating cement paste: a spatially resolved low-field NMR study, Molecular Physics 117, 1006-1014 (2019)
10. C. Cadar, A. Cretu, M. Moldovan, C. Mattea, S. Stapf, I. Ardelean, NMR T1–T2 correlation analysis of molecular absorption inside a hardened cement paste containing silanised silica fume, Molecular Physics 117, 1000-1005 (2019),
11. C. Cadar, I. Ardelean, Surface influence on the rotational and translational dynamics of molecules confined inside a mesoporous carbon xerogel, Magnetic Resonance in Chemistry 57 (10), 829-835 (2019)
12. F Gallego-Gómez, C Cadar, C Lopez, I Ardelean, Microporosity Quantification via NMR Relaxometry, The Journal of Physical Chemistry C 123 (50), 30486-30491(2019)
13. F Gallego-Gómez, C Cadar, C López, I Ardelean, Imbibition and dewetting of silica colloidal crystals: An NMR relaxometry study, Journal of colloid and interface science 561, 741-748(2020)

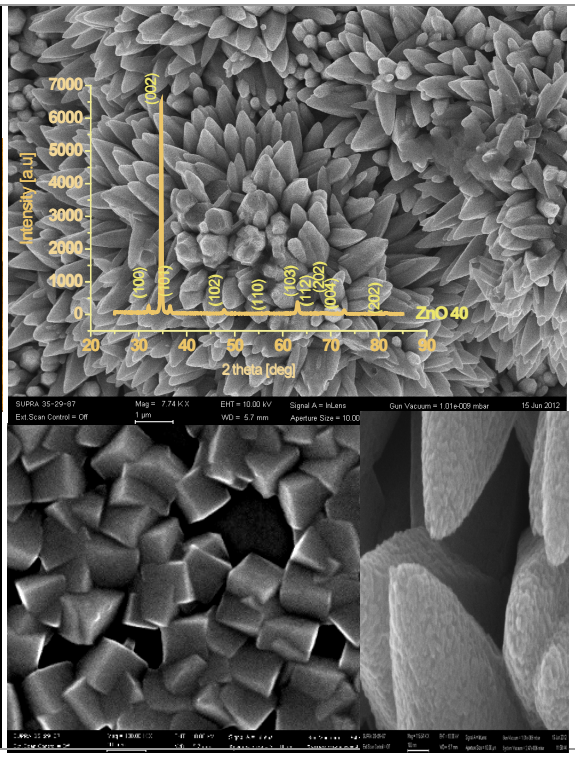
The offer addressed to the economic environment

Research & development	The NMR diffusometry and relaxometry laboratory provides a variety of measurements for characterization of materials. Between these a list of possible investigations is given bellow: • Study the effects of various additives and admixtures on cement hydration; • Study the alteration and ageing of rubber or polymers as well as monitoring the polymerization processes; • Determination of liquid content in different porous materials (stone, wood, ceramics, catalysts, bricks, soil, etc.) and their pore size distribution; • Determining the degree of deterioration of lubricants; • Study the effectiveness of contrast agents used in magnetic resonance imaging with applications in medicine; • Determining the water content and its distribution in foods and seeds; • Determining the permeability of soils to certain pollutants;2D optical images with resolution of up to 1μm of various non-transparent materials.
Consulting	We provide consultancy services on NMR techniques and their applications in medicine, oil industry, study of pollutants transport in soils, pore size characterization, study of cement-based materials, etc.
Training	Training of personal in the field of NMR diffusometry and relaxometry techniques and their applications

RESEARCH LABORATORY FOR COMPOSITE MATERIALS AND ENVIRONMENTAL CHEMISTRY

Contact details

Name	**Research Laboratory for Composite Materials and Environmental Chemistry**
Acronym	**CMEC**
Logo	
Address	103-105 Muncii Blv., Room: C 415, 400641 Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials and Environmental Engineering** **Physics and Chemistry Department**
Telephone	+40 264 401 778 +40 743 174 195
Director	Prof. PhD. Eng. Violeta Popescu
e-mail	violeta.popescu@chem.utcluj.ro



Areas of expertise

Materials science and engineering: oxides, sulphides, polymeric materials, biomaterials, polymers recycling, nanomaterials;
Environment science and engineering: pollutants separation and degradation trough adsorption or photodegradation;

Team

Prof. PhD. eng. Violeta Popescu, Lecturer Ph.D. eng. George Liviu POPESCU, Ph.D. Amalia MAZILU, Ph.D. Eng. Pompilia LOPES.

Representative projects

DISDENT – "Noi materiale pentru tratamentul minim invaziv al cariei dentare incipiente şi al petelor albe" PN-III-P2-2.1-PED2019-2953/13.08.2020 (2020 – 2022)
ENZIPLAST – "The Optimization of the Obtaining Process of the Amino-Acids Chelates for Obtaining of New Materials with New Applications", PNIII-P2-2.1 BG-2016-0204, (2016-2018), https://sites.google.com/site/112bg2016enziplast/
COSMETICDENT, **"New generation of biomaterials for cosmetic dentistry/ project manager"**, PN2, http://granturi.ubbcluj.ro/cosmeticdent/Cosmeticdent.htm (2012-2016)
COMBREG, **"Research related to the obtaining of fuels and raw materials from renewable sources. The project aims to develop methods for organic waste materials recycling"**

Significant results

The most representative publications of the past 5 years:

1. Popescu, V.; Molea, A.**;** Moldovan, M.; Lopes, P.M.; Mazilu Moldovan, A.; Popescu, G.L. The Influence of Enzymatic Hydrolysis of Whey Proteins on the Properties of Gelatin-Whey Composite Hydrogels. *Materials* **2021**, *14*, 3507.
2. Voina, C.; Delean, A.; Muresan, A.; Valeanu, M.; Mazilu Moldovan, A.; Popescu, V.; Petean, I.; Ene, R.; Moldovan, M.; Pandrea, S. Antimicrobial Activity and the Effect of Green Tea Experimental Gels on Teeth Surfaces. *Coatings* **2020**, *10*, 537.
3. Corina Voina, Ada Delean, Amalia Ionela Moldovan, Violeta Popescu, Doina Prodan, Ioan Petean, Andrada Voina-Tonea, Madalina Valeanu The Effects of an Experimental Green Tea Extract Gel On. *Revista de Chimie* **2020**, *71*, 312–320.
4. Dascalu (Rusu), L.M.; Moldovan, M.; Prodan, D.; Ciotlaus, I.; Popescu, V.; Baldea, I.; Carpa, R.; Sava, S.; Chifor, R.; Badea, M.E. Assessment and Characterization of Some New Photosensitizers for Antimicrobial Photodynamic Therapy (APDT). *Materials* **2020**, *13*, doi:10.3390/ma13133012.

5. George Liviu Popescu, N.F., Mircea Cristian Dudescu, Violeta Popescu, Biodegradable agar-agar foils with possible uses in agriculture. obtaining and characterization. *ISB-INMATEH AGRICULTURAL AND MECHANICAL ENGINEERING* **2019**, *8*, 448–455.
6. Violeta Popescu, M.M., Codruta Sarosi, Mihaela Vlassa, George Liviu Popescu, Elena David, Diana, Cojocaru Ileana, Doina Prodan The Identification of Branched-Chain Amino Acids and the Testing of the Antibacterial Effect of Whey and Soy Protein Powders.; 2019; Vol. 21, p. 150.
7. Mazilu, A.; Sarosi, C.; Moldovan, M.; Miuta, F.; Prodan, D.; Antoniac, A.; Prejmerean, C.; Dumitrescu, L.S.; Popescu, V.; Raiciu, A.D.; et al. Preparation and Characterization of Natural Bleaching Gels Used in Cosmetic Dentistry. *Materials* **2019**, *12*, doi:10.3390/ma12132106.
8. Prică, C.-V.; Marinca, T.F.; Neamţu, B.-V.; Popa, F.; Popescu, V.; Chicinaş, I. Structural and Thermal Investigation of Ta–25 Mass% Cu Alloy Prepared by Mechanosynthesis Route. *Journal of Thermal Analysis and Calorimetry* **2019**, *136*, 995–1001, doi:10.1007/s10973-018-7816-4.
9. CEBOTARI, V.; POPA, F.; MARINCA, T.F.; POPESCU, V.; CHICINAŞ, I. Caracterisation of High Manganese Silicides Prepared by Mechanical Milling. *Powder Metallurgy and Advanced Materials: RoPM&AM 2017* **2018**, *8*, 80.
10. Gherman, T.; Popescu, V.; Carpa, R.; Gavril, G.L.; Rapa, M.; Oprescu, E.E. Salvia Officinalis Essential Oil Loaded Gelatin Hydrogel as Potential Antibacterial Wound Dressing Materials. *Revista de Chimie* **2018**, *69*, 410–414, doi:10.37358/rc.18.2.6118.
11. Gherman, T.; Popescu, V.; Carpa, R.; Rapa, M.; Gavril, G.L.; Dudescu, M.C.; Bombos, D. Potential Use of Galium Verum Essential Oil for Antibacterial Properties in Gelatin Based Hydrogels Prepared by Microwave Irradiation Technique. *Revista de Chimie* **2018**, *69*, 575–580, doi:10.37358/rc.18.3.6152.
12. Prodan, D.; Filip, M.; Perhaița, I.; Vlassa, M.; Popescu, V.; Marcus, I.; Moldovan, M. The Influence of Minerals and Lactose Content on the Stability of Whey Protein Powders. *Studia Universitatis Babes-Bolyai Chemia* **2017**, *62*, 397–410, doi:10.24193/subbchem.2017.4.34.
13. Molea, A.; Popescu, V.; Popescu, G.L.; Suciu, R.C.; Dinescu, A.; Moldovan, M. Synthesis and Characterisation of Titanium Dioxide Nanoparticles Sensitised with Natural Chlorophyll Dye Extracted from Mentha Leaves. *Journal of Optoelectronics and Advanced Materials* **2017**, *19*, 272–277.
14. Cojocaru, I.; Prodan, D.; Popescu, V.; Moldovan, M. SEM Analysis of Composites with TCP/HA/Chitosan/Poly (Methylmethacrilate). *Materiale Plastice* **2017**, *54*, 60–62, doi:10.37358/mp.17.1.4786.

Activity with undergraduate students: More than 24 graduation thesis or dissertation.

Activity with pHD students. Research activity with 10 pHD students: 8 with finalized thesis and 2 in progress.

Activity with postdoctoral students. Research activity of 2 postdoctoral students.

Patent no. RO 127718/2015. M. Moldovan, L. Silaghi-Dumitrescu, G. Furtoş, H. Iovu, C. Petrea, V. Popescu, C. Saroşi, S. Boboia, M. Filip, A.L. Colceriu Burtea, R.L. Silaghi-Dumitrescu. Compoziție endodontică pentru obturarea şi sigilarea canalelor radiculare.

Patent no. RO128800-A2; RO128800/2017. Prejmerean C, Moldovan M, Prodan D, Silaghi D L, Furtos G, Iovu H, Petrea C, Popescu V, Pascalau V, Sarosi C, Boboia S, Filip M, Colceriu B A L, Silaghi D R L, Damian C M, Sarosi L C, Matrice organică şi compozit de restaurare indirectă pentru utilizare în stomatologie.

Products
1. IR photosensitive PbS films; semiconducting PbS, CuS, CdS, TiO_2, ZnO, Fe_2O_3 films and powders.
2. Fuels from plastic waste.
3. Biodegradable plastic materials.
4. Diverse natural extracts.

The offer addressed to the economic environment

Research & development	The correlation between optical, structural and morphological properties of semiconductors. The obtaining of materials with photocatalytic properties. Chemical recycling of plastic materials. Fuels obtaining, characterization and testing.
Consulting	FT-IR and UV-VIS spectroscopy. Plastic materials characterization and recycling.
Training	Rapid identification of organic compounds by IR spectroscopy using ATR-FTIR. Elaboration of UV-VIS spectroscopic quantitative analysis methods. Polymers recycling.

LABORATORY OF ELECTROCHEMISTRY IN ADVANCED MATERIALS

Contact details

Name	**Laboratory of Electrochemistry in Advanced Materials**
Acronym	**ELMA**
Logo	
Site	http://chimie.utcluj.ro/elma
Address	103-105 Muncii Blv., Room: C 502, 400641, Cluj-Napoca, Romania
Faculty Department	**Faculty of Materials and Environmental Engineering** **Physics and Chemistry Department**
Telephone	+40 264 202797
Fax	+40 264 415054
Director	Prof. Dr. Habil. Chem. Lorentz.JÄNTSCHI
Honorary Director	Prof. Em. Dr. Chem. Elena Maria Pică
e-mail	Lorentz.JANTSCHI@chem.utcluj.ro empica@yahoo.com, elena.pica@chem.utcluj.ro

Detecting Extreme Values with Order Statistics in Samples from Continuous Distributions

Areas of expertise

Achievement of some electrochemical sensors.
Synthesis of some advanced materials used for achievement of membrane sensors.
Chemical kinetics of rapid reactions.
Modelling and simulation of physical-chemical processes.

Team

Prof.Dr.Chem. Lorentz JÄNTSCHI, Prof.Dr.Chem. Elena Maria Pică, Assoc. Prof. Dr. Chem. Mihaela Ligia Ungureşan, Assoc.Prof.Dr.Eng. Dana-Adriana Ilțiu-Varvara, Prof.Dr.Phys. Eugen Culea, Dr.Eng.Ec. Luminița Cristina Pirău, Dr.Mioara Zagrai, Dr.Eng. Marius Roman, Drd.Phd.students: Cornel Sava, Drd.Phd.students: Dragoș Teodor Lup

Representative projects

LAREAN, "**Regional laboratory for complex spectroscopic and electrochemical analyzed**", BCUM, http://ro4096.uefiscsu.ro/componenta3/detalii.php?comisie=1&id=403&unitate=componenta3_cncsis&prog=b (1999-2009)
NITRITSENZ, "**Nitrite selectiv electrochemical sensor for controling nitrite in food products**", PNCDI-AGRAL, http://www.precis.ro/modules.php?name=News&file=article&sid=97 (2004-2007)
MAVOPTEL, "**Multifunctional nanocomposites based supramolecular optoelectronic properties, photochemical, electrochemical and bio-precursors for advanced materials"**, CEEX, http://acad-icht.tm.edu.ro/nationale/mavoptel.htm; http://www.infoinvent.md/pdf/infoinvent/catalog/2013/section_A.pdf (2006-2008)
BIOAMBREG, "**Development of green products in biodegradable, packaging and components for achieving protection**", CEEX, http://www.inma.ro/pagina_web_parteneriate/Cioica/DatePagWEB_1.htm (2007-2010)
I.C. "**Research concerning the characterization of the oily mill scale in order to identify a optimum method for reduction of the quantities of hazardous wastes landfilled"**, Internal competition for Research/ Development/ Innovation C.I. type1.1-TEMA 4, http://research.utcluj.ro/index.php/lansare-competitii-interne.html (2016-2017)
ET/108/MEC/UEFISCSU/5892/, "**Processes at phases interface: Mathematical modelling, numerical optimization, web implementation, with applications for separation and characterization of biological active compounds"**, http://lori.academicdirect.ro/research/grants/ET_REZ_FINALE_26_IULIE.htm (2006-2008).

Significant results

The most representative publications of the past 5 years:

1. Lorentz JÄNTSCHI", Detecting extreme values with order statistics in samples from continuous distributions", in *Mathematics, MDPI*, Volume: 8, no.2:216, Pages: 21+21, Published: 2020.
2. Mioara, Zagrai; Mihaela, Unguresan; Simona, Rada; Jian, Zhang; Maria, Pica and Eugen, Culea. "Local structure in gadolinium-lead-borate glasses and glass-ceramics", in *Journal of Non-Crystalline Solids*, Volume: 546, Pages: 1-8,

Published: 2020.
3. Cornel, Sava; Elena Maria, Pica and Marius-Daniel, Roman, "Considerations Regarding the Use of Sludge in Agriculture", in *Research Journal of Agricultural Science*, Volume: 51, no.2, Pages: 57-63, Published: 2019.
4. Iluțiu-Varvara, D. A.; Tintelecan, M.; Aciu, C.; Sas-Boca, I. M.; Hădărean, A.; Rus, T.; and Mare, R. "An Assessment of the Substance Losses from Charge Composition Used to the Steelmaking - Key Factor for Sustainable Steel Manufacturing", in *Procedia Manufacturing*, Volume: 32, Pages: 15-21, Published: 2019.
5. Sas-Boca, Ioana-Monica; Tintelecan, Marius; Pop, Mariana; et al., "Severe reduction in section of copper wire using the technology of wire cold cassette roller dies", 11th International Conference on Interdisciplinarity in Engineering (INTER-ENG) Location: Tirgu Mures, ROMANIA Date: OCT 05-06, 2017 Book Series: *Procedia Manufacturing*, Volume: 22, Pages: 73-78, Published: 2018.
6. Sas-Boca, Ioana Monica; Frunza, Dan Ioan; Ilutiu-Varvara, Dana Adriana; et al., "The properties of bimetallic multi-layer (C45 and S235JR) and the multi-layer steel made by forging, 5th International Conference on Powder Metallurgy and Advanced Materials", RoPM&AM 2017 Location: Cluj Napoca, ROMANIA Date: SEP 17-20, 2017 POWDER METALLURGY AND ADVANCED MATERIALS, Book Series: *Materials Research Proceedings*, Volume: 8, Pages: 11-17, Published: 2018.
7. Dragos Teodor, Lup; Ana Maria, Stroe; Paul Mihai, Chezan and Elena Maria, Pica, "The Importance of Waste Incineration", in *Studia Universitatis "Babes-Bolyai", Series: "Ambientum"*, Volume: 63, no.1, Pages: 43-48, Published: 2018.
8. Mioara, Ferent (Zagrai). "Sisteme oxidice vitroase cu aplicaţii în protecţia mediului", in *PhD Thesis (Romanian language)* / UTCN, PhD supervisor, Elena Maria Pică, 253 pages,Published: 2018.
9. Ilutiu-Varvara, Dana-Adriana; Aciu, Claudiu; Pica, Elena Maria; et al., "Research on the Chemical Characterization of the Oily Mill Scale for Natural Resources Conservation", Conference: 10th International Conference on Interdisciplinarity in Engineering (INTER-ENG) Location: Tirgu Mures, ROMANIA Date: OCT 06-07, 2016 10TH INTERNATIONAL CONFERENCE INTERDISCIPLINARITY IN ENGINEERING, INTER-ENG 2016, Book Series: *Procedia Engineering*, Volume: 181, Pages: 439-443, Published: 2017.
10. Andra Cristina, Gagiu; Fulvio, Amato; Xavier, Querol; Oriol Font, Piqueras and Elena Maria, Pica, "Assessing sources and contaminates of soil in public parks and playgrounds of Romanian cities located on the external side of the Carpathian mountain chain", in "*Ecoterra*", *Journal of Environmental Research and Protection*, Volume 14, no.2, Pages: 10-26, Published: 2017.
11. Cornel, Sava; Iulia, Dragan; Ana Maria, Stroe; Luminita Cristina, Pirau and Elena Maria, Pica, "Reducing the Sludge Quantity Produced from Used Water Purification - A Source of Profit", in *The Annals of "Dunărea de Jos" University of Galati. Fascicle IX. Metallurgy and Materials Science, Special Issue,* no.4, Pages: 61-63, Published: 2017.
12. Rada, S.; Unguresan, Mihaela Ligia; Bolundut, Liviu; Rada, Marius; Vermesan, Horatiu; Pica, Elena Maria and Culea, Eugen, "Structural and electrochemical investigations of the electrodes obtained by recycling of lead acid batteries", in *Journal of Electroanalytical Chemistry*, Volume: 780, Pages: 187-196, Published: 2016.

Significant solutions:
Determination of various ions in different environmental samples;
Analytical control of chemical and biochemical products/processes;
Research-development studies performed, for environmental pollution.

Products and technologies:
1. The development of ecologic products from biodegradable materials for some packs and protection equipment.
2. Electrocatalysis of some transformation reaction for a major different pollutants in inorganic and organic mater.
3. Nanomaterials with applications in mediated electrocatalysis using modified electrodes.

Patents:
1. Dana Vlascici, Elena Maria Pică, Cosma - Făgădar Eugenia, Bizerea Otilia, Costişor Otilia, Cosma Viorica, 2010. "Senzor potenţiometric nitrit-selectiv", Patent No.122.790, in *B.O.P.I* Section:Patents, No.1, pp.72; http://www.osim.ro/publicatii/brevete/bopi_2010/bopi110.pdf
2. Eugenia. Fagadar-Cosma, Dana. Vlascici, Elena Maria Pică, Otilia Costişor, Viorica Cosma, Liliana Olenic, 2012. Otilia Bizerea, "Procedure for Obtaining of A Highly Selective Potentiometric Sensor for Silver Ion Detection Based on Porphyrin Ionophore", *Patent* , No.123.447, in *B.O.P.I* Section:Patents, No.5, pp.104; http://www.osim.ro/publicatii/brevete/bopi_2012/bopi_inv_05_2012.pdf

The offer addressed to the economic environment

Research & development	The development of some methods for achievement of electrochemical sensors and achievement of some new sensors used in different measurements (water and soil of environmental measurements) The development of advanced modeling procedures, identification, monitoring and control of processes occurring in electrochemical interface.
Consulting	Consulting, design, research and prototyping of different sensors based on reduction of ions element.
Training	Advanced Materials Electrochemistry and obtaining them Obtaining of the Electrochemical Sensors Modeling and Simulation of the Chemical Processes Physical and chemical reference data for environment

GROUP FOR RESEARCH AND DESIGN IN URBAN PLANNING

Contact details

Name	**Group for Research and Design in Urban Planning**
Acronym	**CPU**
Logo	
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Architecture/1_Agachi.pdf
Address	34-36 Observatorului Str.,400500, Cluj-Napoca, Romania
Faculty Department	**Faculty of Architecture and Urban Planning Urban Planning Department**
Telephone	+40751055365
Fax	+40 264 402558
Director	Conf. Dr. Arh. Octav Silviu OLĂNESCU
e-mail	octav.olanescu@arch.utcluj.ro

Areas of expertise

Research in urban design and urban planning. **Consulting** in urban design and urban planning
Developing planning documentations and projects: General urban plans and Regional urban plans, together with related local regulations, Urban Detail plans, Protection and development of the built heritage.
Design in architecture and building restoration. **Design** in urban design and urban planning.

Team

Conf. Dr. Arh. Octav Silviu OLĂNESCU
Prof. Dr. Arh. Mihaela Ioana AGACHI, Conf. Dr. Arh. Vlad Sebastian RUSU, Ş. L. Dr. Arh. Moldovan SILIVAN

Representative projects

"**International Architectural competition for the spatial planning of the Tamula lakeside area"**, Voru, Estonia, organized by the Town hall of Voru city ant the Estonian Union of Architects",http://www2.arhliit.ee/english/competitions/domestic/4538/ (2008)
"**International Architectural competition for reconstruction of Rakvere's St Paul's church"**, Rakvere, Estonia, organized by the City of Rakvere/ Estonia", http://www2.arhliit.ee/english/competitions/domestic/4550/ (2009)
"**International competition for the Memorial of Aeronautics, Bucharest**",http://www.oar.org.ro/concurs.php?id=10&st=1 (2009)
"**General Urban Plan with related local regulation (PUG and RLU) for Azuga Town, Prahova County**", (2009)
"**International competition for the theme of the Cultural Center of Transylvania in Cluj-Napoca, organised by the City of Cluj-Napoca**",http://www.archdaily.com/112383/transylvania-cultural-center-ioana-mihaela-agachi-octav-s-olanescu-anamaria-c-popa-vlad-s-rusu/ (2010)
"**Historical and urban study for P.U.G. of Cluj-Napoca**", (2010)

Significant results

The most representative publications of the past 5 years:

Articles:

1. Olănescu, Octav Silviu, "There is no urban design for the new postsocilaist developments", *Acta Technica Napocensis: Civil Engineering & Architecture*, Vol. 59 No. 3, 2016
2. Anca Andreia Șelariu, Mihaela Ioana Maria Agachi, Temporary architecture incorporated into abandoned coal mine areas, Acta Technica Napocensis: Civil Engineering & Architecture Vol. 60 No. 3 (2017), pp. 88-100.

3. Olănescu, Octav Silviu,Agachi, Mihaela Ioana, "Public Space as a Sustainable Built Environment Feature", *Acta Technica Napocensis: Civil Engineering & Architecture* (Special Issue: Sustainable Development and the Built Environment. QUESTIONS 2015), 2015,
4. Agachi, Mihaela Ioana, Olănescu, Octav Silviu, "New residentialarea on theoutskirts of Zalau", *Acta Technica Napocensis: Civil Engineering & Architecture* (Special Issue: Sustainable Development and the Built Environment. QUESTIONS 2015), 2015.

Studies:
1. 2019 - Urban Regeneration Guides for the Colective Housing Neighborhoods - Constanţa

Books
1. Olănescu, Octav Silviu, *Aspecte ecologice în determinarea mediului construit*, Cluj-Napoca: U.T. Press, 2018
2. Agachi, Mihaela Ioana, Olănescu, Octav Silviu, *Design Urban, Zona Expo-Transilvania, Propuneri de dezvoltare urbanistică*, Cluj-Napoca: U.T. Press, 2015.
3. Rusu, Vlad Sebastian, *Evoluția urbanistică a Clujului interbelic*, Editura Academiei Române - Centrul pentru Studii Transilvane, Cluj-Napoca, 2015.

International competitions awards:
1. 2019 - 1st Prize at the International competition for *Sopor Masterplan*, Cluj-Napoca
2. 2019 – 2nd Prize at the International competition for *Cetăţuia Hill*, Cluj-Napoca
3. 2018 - 1st Prize at the International competition for *Parcul Feroviar*, Cluj-Napoca
4. 2017 - 1st Prize at the International competition for *Turnul Pompierilor*, Cluj-Napoca
5. 2017 – The grand prize of the European Union for Cultural Heritage – Europa Nostra – „Reabilitarea şi refuncţionalizarea Palatului Cultural din Blaj"

Exhibitions:
1. 2019 – National exhibition Zilele Uzinei de Apă – Arhitectura între tradiţie şi inovatie, Suceava
2. 2019 – Exhibition of the *Sopor Masterplan Competition*, Pavilion Casino Parc Central, Cluj-Napoca
3. 2019 - Exhibition of the *Cetăţuia Hill Competition*, Pavilion Casino Parc Central, Cluj-Napoca
4. 2018 - Exhibition of the *Parcul Feroviar Competition*, Casa de cultură a studenţilor, Cluj-Napoca
5. 2017 - Exhibition of the *Turnul Pompierilor Competition*, Filiala OAR Transilvania, Cluj-Napoca

The offer addressed to the economic environment

Research & development	Studies regarding urban design and urban planning and history of urbanism. Architectural design, building restoration design, urban design.
Consulting	Our group is open to cooperate in interdisciplinary teams for research in urban design and urban planning, at national and international level, with researchers, teachers from universities and with professional associations.
Training	The group is able to approach general urban plans, regional urban plans, urban detail plans, plans for territory improvement at different levels and also architectural projects.

PROJECTED SPACE | PRODUCED SPACE |PERCEIVED SPACE - RESEARCH GROUP

Contact details

Name	**Projected Space | Produced Space | Perceived Space** Research Group
Acronym	ppp SPACE
Logo	
Site	https://www.facebook.com/groups/spatiuproiectat.spatiuprodus.spatiuperceput/, http://research.utcluj.ro/index.php/architectura.html
Address	72-76 Observatorului str, room A03b, Cluj-Napoca, 400363
Faculty Department	**Faculty of Architecture and Urban Planning/ Department of Architecture**
Telephone	+40/0264/401843
Fax	-
Director	Dr. Arch. Dana JULEAN
e-mail	dana.julean@arch.utcluj.ro,spatiuproiectat.spatiuprodus.spatiuperceput@groups.facebook.com

Areas of expertise

- research in theory of architecture and architecture criticism
- interdisciplinary studies bordering on theory of architecture, culture theory, psychology, philosophy and sociology
- miscellaneous studies related to space, spatiality, and interpretations of space

Team

active members:
Senior Lecturer Dr. Arch. Dana JULEAN; **Senior Lecturer Dr. Arch. Smaranda TODORAN**; **Senior Lecturer Dr. Arch. Adriana MĂGERUȘAN**; **Assist. Prof. Dr. Arch. Dan-Ionuț JULEAN**
external collaborators:
T. Assist. Dr. Kinga SZABO

Representative projects

„PARTNERSHIP for organising a series of master classes in architecture within the project «Universitatea Vârstei a 3-a (U3)» Cluj-Napoca [‘University for elderlies’ Cluj-Napoca]”
period: December 2018 - January 2019
partners: Platforma România 100 and the Technical University of Cluj-Napoca, through the research group „pppSpace” [Projected Space | Produced Space | Perceived Space]
team: CROITORU, Andra for Platforma România 100 and JULEAN, Dana for pppSPACE
„PARTNERSHIP for colaboration for the “Up STAIRS” project
period: June 2017 - June 2018
partners: Asociația pentru Teatru și Carte (PETEC) and the Technical University of Cluj-Napoca, through the research group „pppSpace” [Projected Space | Produced Space | Perceived Space]
team: MARINESCU, Irina and UȘURELU, Alina for PETEC and JULEAN, Dana for pppSPACE

Significant results

The most representative publications of the past 5 years:

- JULEAN Dana; JULEAN Dan-Ionuț. „Monumentul: de la abandon la comunitate. Un studiu de caz despre valorificarea patrimoniului industrial / The Monument: from Abandonment to Community. A Case Study on the Enhancement of Industrial Heritage", Transsylvania Nostra nr. 3 (2020): 13-21. Cluj-Napoca: SC. UTILITAS SRL. ISSN 1842-5631 (print), ISSN-L 1842-5631, ISSN 2344 – 5084 (on-line) http://transsylvanianostra.eu/tnjournal/ro
- JULEAN, Dana. „Eșecul arhitecturii". In: Psihoarhitectura: diseminări despre interferența arhitecturii cu psihologia, vol II, coordonator IANA Codruța (Iași: Pim, 2019): pp. 81-104 ISBN: 978-606-13-4800-8
- JULEAN, Dana. „Potențialul basmului în vindecarea spațiului". In: Psihoarhitectura: diseminări despre interferența arhitecturii cu psihologia, vol II, coordonator IANA Codruța (Iași: Pim, 2019): pp. 105 -121 ISBN: 978-606-13-4800-8
- JULEAN, Dana. "Why Architects See Things Differently - An Architectural Approach on Teaching Space Perception", in Proceedings - 5th Global Academic Meeting, GAM 2016, 24-26 March, Budapest, Hungary. Kokani: European Scientific Institute, ESI, 2016, pp. 1-8. ISBN 978-608-4642-48-0, doi: 10.19044/esj.2016p2, http://gameeting.info/images/5th.GAM.2016.pdf
- POP, Dana; MATU, Silviu-Andrei; SZENTÁGOTAI, Aurora. "Experimental Assessment between Building Regulations and Claustrophobia", Urbanism. Arhitectură. Construcții vol. 9 nr. 3 (2018): 251-264. ISSN 2069-6469 http:///uac.incd.ro/

books

TODORAN, Smaranda Maria, ed. coord. OPINCARIU, Dana, ȚIGĂNAȘ, Șerban, ed. *Locuire 123. Caietul cu case*, UTPRESS, Cluj-Napoca: UT Press, 2020. ISBN: 978-606-737-xxx-x.

POP, Dana. *Arhitectură, percepție și frică*, București: Paideia, 2016. ISBN: 978-606-748-130-3.

The offer addressed to the economic environment

Research & development	1. theory of architecture, architecture criticism 2. interdisciplinary studies bordering on theory of architecture, culture theory, psychology, philosophy and sociology 3. architectural research methodology 4. culture theory 5. cultural sustainability 6. politics of heritage 7. socio-spatial practices 8. space psychology and perception 9. tactical urbanism
Consulting	1. studies in the fiels of: theory of architecture, architecture criticism, interdisciplinary research 2. research methods on architecture 3. evidence based design 4. spatial experiments - architecture, art, urban design 5. editorial projects
Training	1. interdisciplinary workshops 2. summer schools 3. courses 4. masterclasses

ARCHITECTURE. TIME. HABITUDES RESEARCH GROUP

Contact details

Name	**Architecture. Time. Habitudes Research Group**
Acronym	**ATH**
Logo	
Site	http://research.utcluj.ro/index.php/architectura.html
Address	34-36 Observatorului Str., room 5 Cluj-Napoca
Faculty Department	**Faculty of Architecture and Urban Planning** **Department of Architecture**
Telephone	+40-0264-401-843 | +40-0264-401-847
Fax	-
Director	Dr. habil. Dan-Ionuţ JULEAN, architect Associate Professor
e-mail	ionut.julean@arch.utcluj.ro

Areas of expertise

History and theory of architecture
Art history – decorative and applied arts
Building restoration
Cultural heritage enhancement
Style and decoration – cultural environment and lifestyle
Cultural tourism

Team

Assoc. Prof. Dr.habil. Arch. Dan-Ionuţ JULEAN – Senior Lecturer Dr. Arch. Dragoş Ştefan Dascălu,. Senior Lecturer Dr. Arch. Dana Julean, T. Assist. Dr. Arch. Daniel Şerban, Ph.D. student Arch. Maria-Alexandra Sas, Ph.D. student Ileana-Ana Abos, Ph.D. student Alida-Ozana Crişan.
External collaborators:
Dr.Arch. Eugen-Cristian Rus, Dr. Dana Maria Mărcuş (licensed in history),
Dr. Arch. Endre Ványolos, Dr. Arch. Vlad Nicolae Cocheci;
Petru Dimoff, photographer.

Representative projects

Four research projects and five partnerships, within the past five years:

2 PARTNERSHIPS for research activities within the project "Recomposing fragments: a (micro)history of the Korda de Borosjenő family in context ".
period: March 2021 – March 2022
partners: Parohia Reformată Centrală Cluj I and Muzeul Haáz Rezső in Odorheiu Secuiesc
PARTNERSHIP for organising a series of master classes in architecture within the project «Universitatea Vârstei a 3-a (U3)» Cluj-Napoca ['University for elderlies' Cluj-Napoca]"
period: December 2018 - January 2019
partners: Platforma România 100 and the Technical University of Cluj-Napoca
PARTNERSHIP for professional activities within the project „Free Time Factory", Turda
period: March 2016 - December 2018
partners: Fundaţia Rațiu pentru Democrație and the Technical University of Cluj-Napoca
PARTNERSHIP for organising a design competition – a piece of furniture made of scrapped books
period: March 2016 - July 2016
partners: „Lucian Blaga" Central University Library of Cluj-Napoca and the Technical University of Cluj-Napoca
RESEARCH PROJECT for enhancing built heritage – „Free Time Factory" the former Brewery in Turda
period: May 2018 - June 2018
partners: Fundaţia Rațiu pentru Democrație and the Technical University of Cluj-Napoca
RESEARCH PROJECT for enhancing built heritage – the Central Cemetery in Cluj-Napoca
period: September 2017 - October 2017
partners: Ordinul Arhitecţilor din România – Filiala Teritorială Transilvania and the Technical University of Cluj-Napoca

RESEARCH PROJECT for enhancing built heritage – „Free Time Factory" the former Brewery in Turda
period: February 2017 - June 2017
partners: Fundaţia Raţiu pentru Democraţie and the Technical University of Cluj-Napoca
RESEARCH PROJECT for enhancing built heritage – the Central Cemetery in Cluj-Napoca
period: October 2016 - November 2016
partners: Ordinul Arhitecţilor din România – Filiala Teritorială Transilvania and the Technical University of Cluj-Napoca

Significant results

The most representative publications of the past 5 years:

1. Julean, Dan-Ionuț, "Între naționalism și inventare a tradiției. Catedralele Unirii la vest de Carpați", *Psihoarhitectura: diseminări despre interferența arhitecturii cu psihologia,* vol II, coordonator Codruța Iana, Iași: Pim, 2019, pp. 151-166.
2. Julean, D.I., „«Spre Oradea» în căutarea memoriei unei comunităţi evreieşti", *Arhitectura* – revista Uniunii arhitecţilor din România fondata în 1906, No. 4 (682) (2019): pp. 42-49.
3. Julean, D.I., "The Architecture of a Photograph: Deconstructing La Castiglione's Scherzo di follia", *Philobiblon*, vol. XXII, Nr. 2 (2017), pp. 159-173.
4. Julean D.I., "On Teaching History of Architecture in Higher Education or How to Use Sir Banister Fletcher's A History of Architecture for a 21st Century Course in Architectural History – an Overview", *European Scientific Journal*, Vol.12, nr.10, pp.9-18, 2016.
5. Sas, Maria Alexandra, "Reconsiderarea unei ruine. Studiu pentru valorificarea ansamblului Castelului Haller-Jósika din Garbou", *Transsylvania Nostra*, Year XIII, No. 50 (2019), pp. 20-31.
6. Paun-Constantinescu, Ilinca; Dascălu, Dragoș, Sucală, Cristina, "An Activist Perspective on Industrial Heritage in Petrila", *The Public Historian*, Vol. 39, No. 4 (2017), pp. 114–141;

Books:

1. Julean, Dan-Ionuț; Julean, Dana. *Ascensiunea și decăderea domeniului Haller din Coplean. Destinul unei familii, destinul unui castel / The Rise and Fall of the Haller Estate in Coplean. The Destiny of a Family, the Destiny of a Castle*, Cluj-Napoca: Presa Universitară Clujeană, 2019. 182 p. (e-book).
2. Julean D.I.; Julean Dana, *Catedralele Unirii la vest de Carpați / The Cathedrals of the Great Union to the West of the Carpathians*, Cluj-Napoca: Presa Universitară Clujeană, 2018. (e-book).
3. Julean, D.I.; Julean Dana, *Moştenirea familiei Bánffy în Transilvania… / A Bánffy-család öröksége Erdélyben… / The Bánffy Family Inherintance in Transylvania…*, Cluj-Napoca: Presa Universitară Clujeană, 2017. (e-book).
4. Julean, D.I., *Spaţiul iudaic, un spaţiu al comunităţii*, București: Paideia, 2016.

The offer addressed to the economic environment

Research & development	specialized studies (architecture, history and theory of architecture / art history, genealogy) heritage studies & enhancement of the cultural and artistic heritage architectural restoration curating exhibitions cultural tourism scenography
Consulting	architectural and artistic heritage (history of architecture, art history) architectural restoration decorative and applied arts – valuation of antique furniture and decorative objects curating activities – co-curating exhibitions, , exhibit design and solutions from conception to realisation cultural and academic tourism scenography Transylvanian genealogy
Training	the possibility to co-organise workshops, summer schools, masterclasses, specialised courses, etc.

INVENTARIUM – RESEARCH GROUP FOR THE (RE)COGNITION OF ARCHITECTURAL AND URBAN HERITAGE

Contact details

Name	**INVENTARIUM: research group for the (re)cognition of architectural and urban heritage**
Acronym	**INVENTARIUM**
Logo	• INVENTARIUM •
Site	https://research.utcluj.ro/tl_files/research/Research%20Domain/Architecture/INVENTARIUM_PopVirgil.pdf
Address	room 4, 34-36 Observatorului str., 400489 Cluj-Napoca
Faculty Department	**Faculty of Architecture and Urban Planning**
Telephone	-
Fax	-
Director	Prof. PhD habil. Arch. Virgil POP
e-mail	virgil.pop@arch.utcluj.ro

Areas of expertise

The conservation, and rehabilitation of old buildings and other forms of heritage, including urban rehabilitation and the rehabilitation of historical parks.

Team

Prof. PhD habil. Arch. Virgil POP
Reader PhD Arch. Cristina PURCAR
Reader PhD Arch. Andreea MILEA
Lecturer PhD Eng. Imola KIRIZSÁN
Lecturer PhD Arch. Silivan MOLDOVAN
Teaching Assistent PhD Arch. Mihai RACU

Representative projects

Transformation of medieval religious buildings during the Counter-Reformation: comparative study between churches of Rome and churches in Transylvania.
The research involved students of the fourth year, in the context of study trips to Rome (2013 and 2016) and participation in exhibitions and conferences. Coordinators: Prof. PhD habil. Arch. Virgil Pop, Reader PhD Arch. Cristina Purcar.
Transylvanian railway architectural heritage: documentation through photography, surveying, sources and documents research, **publishing studies** (including recommendations for interventions), conservation projects in partnership with CFR (Romanian Railway Company, Cluj Regional) (registration no.: FAU 444/24 / 10.2016).
The research involved students of the first year, by the *Practice* of survey work. Surveys were carried out at stations Jibou (2015), Răstoci (2016), Oradea (2017), Satu Mare (2017), Baia Mare (2019) stations. Coordinators: Reader PhD Arch. Cristina Purcar, Reader PhD Arch. Andreea Milea.
The public image of the monuments of Cluj: documentation through photography, surveying, archiving and setting up a digitized database.
The research involved students of the fourth year, through *Monuments Conservation* projects they develop (2015-2017, 2nd semester). Coordinators: Prof. PhD habil. Arch. Virgil Pop, Reader PhD Arch. Andreea Milea, T. Assist. PhD Arch. Mihai Racu.

Surveying the monuments of Cluj: documentation through photography, surveying, archiving and setting up a digitized database.
The research involved students of the first year, by the *Practice* of survey work (2014-2018). Coordinator: Reader PhD Arch. Andreea Milea.
Historical Parks of Transylvania: field research, sources and documents research, publishing studies (including recommendations for interventions). Coordinator: Lecturer PhD Arch. Andreea Milea.
Documentation through photography of vernacular built heritage in The Ethnographic Park *Romulus Vuia*, Cluj (in partnership with The The Ethnographic Museum of Transylvania, Cluj) (registration no.: FAU 510/11.11.2016, EMT 2806/21.11.2016).
The research involved students of the architectural photography group *photo-FAU cluj.* Coordinator: Reader PhD Arch. Andreea Milea.

Significant results

1. Andreea Milea: *The Beginnings of Transylvanian Public Urban Parks*, Transsylvania Nostra anul XII nr. 45 (1/2018).
2. Andreea Milea: *The Csáki Manor House Park in Almașu, Sălaj County. Historical and contemporary data*, Transsylvania Nostra anul XI nr. 42 (2/2017).
3. Andreea Milea: *The Kendi-Kemény Manor House Park in Brâncovenești, Mureș County. Historical and contemporary data*, Trassylvania Nostra anul XI nr. 41 (1/2017).
4. Andreea MILEA: *Bánffy Manor House Park in Răscruci, Cluj County. Historical and Contemporary Data,* Transsylvania Nostra anul X nr. 38 (2/2016).
5. Andreea MILEA: *The Naláczi-Fáy Manor House Park in Nălațvad, Hunedoara County. Historical and Contemporary Data,* (part I), Transsylvania Nostra anul IX nr. 35 (3/2015), (part II) Transsylvania Nostra anul IX nr. 36 (4/2015)
6. Andreea MILEA: *Wesselényi Manor House Park in Jibou, Sălaj County. Historical and Contemporary Data,* Transsylvania Nostra anul IX nr. 33 (1/2015).
7. Andreea MILEA: *Wass-Bánffy Castle Park in Gilău, Cluj County. Historical and Contemporary Data,* Transsylvania Nostra anul VIII nr. 31 (3/2014).
8. Virgil POP, Cristina PURCAR: *Aspecte stilistice ale arhitecturii feroviare interbelice din Transilvania*, lucrare la Congresul istoricilor din România, Academia Română și Universitatea Babeș-Bolyai, Cluj, august 2016.
9. Virgil POP: „Armenopolis - a baroque town", in *Die Kunst der Armenier im Oestliches Europa*, Bőhlau Verlag, Koln, 2014.
10. Cristina PURCAR: *Mapping Territorial Cohesion Through Railway Architecture. Transylvanian Case Studies, 1860s – WWI*, lucrare la seminarul internațional "From state-building to European integration. The role of the railway network in the social and territorial integration of Europe (1850 - 2017)", Barcelona, mai 2018 (în curs de publicare).
11. Cristina PURCAR: *Photography, Railways and Landscape in Transylvania, Romania. Case Studies in Digital Humanities*, lucrare la seminarul internațional "Mapping Historical Landscapes in Transformation: Methods, Applications and Challenges", University of Leuven, 24-25 noiembrie 2017 (în curs de publicare).
12. Cristina PURCAR: *'A Fabulous Painting, In Which I Would Live' - Paul Delvaux's pictorial poetic of the railway periphery - between art and urban history*, sITA – studies in History and Theory of Architecture, nr.4/2016, pp. 66-82.
13. Cristina PURCAR: *At Home by the Tracks. Domesticity in Proximity of Railway Space in (Early) Modern Art*, Questions, International Workshop, Sustainable Development and the Built Environment, Acta Technica Napocensis: Civil Eng. & Arch., vol. 58, nr. 4 (2015)

The offer addressed to the economic environment

Research & development	History of architecture and art studies, archive studies, documentation through photography of built and urban heritage. Surveying and diagnosis of built and urban heritage objects
Consulting	Recommendations for interventions, built and urban heritage conservation projects.
Training	Training in surveying, studying and evaluating built and urban heritage.

ARTS • CULTURE • DESIGN • SUSTAINABILITY

Contact details

Name	**Arts - Culture - Design - Sustainability**
Acronym	**ACDS**
Logo	ARTS CULTURE DESIGN SUSTAINABILITY
Site	
Address	72-76 Observatorului Street, 400500, Cluj-Napoca, Romania
Faculty Department	**Faculty of Architecture and Urban Planning Department of Architecture**
Telephone	+40-264-401843
Fax	+40-264-590913
Director	Assoc.Prof.PhD Arch. Dorina VLAD
e-mail	dorina.vlad@arch.utcluj.ro, dorinavlad@yahoo.com

Areas of expertise

Research and study in the field of :
- architecture and decorative arts, contemporary design – architectural design / object design;
- advances in architectural technology and design;
- sustainability – part of contemporary society development;
- research and study of rural and urban heritage and communities;
- exhibition organization and participation;
- education and improvement of the educational process.

Team

Assoc.Prof.PhD. Arch. Dorina VLAD, Assoc.Prof.PhD. Arch. Dana OPINCARIU, Assoc.Prof.PhD. Arch. Paul MUTICĂ, Lect.PhD.Arch. Ana-Maria GRAUR, Lect.PhD.Arch. Andreea POP (MOȚU), Lect.PhD.Arch. Paul MOLDOVAN, Lect.PhD.Arch. Leonard VARTIC, T.Assist.PhD Arch.Alina VOINEA, PhD student Arch. Fabian LUCA.
External Collaborators: Lect.PhD.Arch. Adrian ARAMĂ, Arch. Raluca GRAPA ROȘCA

Representative projects

Organization of Student Competition - in partnership with the Swiss furniture manufacturer Vitra- the student design contest entitled '#refreshVerner Panton's even', 2019-2020
Collaborations with institutions and organizations in the field of education, research and culture, economic units
Participation at Bucium 2017 Summer University, collaboration between FAU representatives and RPER-Romania Association "Rencontres du Patrimoine Europe-Roumanie"

Significant results

Books (2017-2021):
D.VLAD, A.MOȚU, „Mobilier. Tehnica mobilei. Note de curs", ISBN 978-606-737-447-6, Cluj-Napoca: UTPRESS, 2020.
L.VARTIC, „Limbajul cartografic" ISBN 978-606-737-448-3, Cluj-Napoca: UTPRESS, 2020.
P.MOLDOVAN, „Transformations et mutations de l'enseignement de l'architecture à l'ère du numérique. Persistance ou obsolescence du modèle d'enseignement du projet de type Beaux-Arts" ISBN 978-606-737-424-7, Cluj-Napoca: U.T.Press, 2019.
Articles (2017-2021):
2021: D.OPINCARIU, A.MOTU, L.VARTIC, A.VOINEA, "Mimetics and Originality in Architectural Design" , "Evolution and Sedimentation in Design Process - Retrospective of an Experience at Architecture Design Studio", "Back to the Future - The Role of Architectural Hand Drawing", "Learning in Perspective - Past, Present and Future of the Perspective Drawing", "Architecture Models. The Role of Three-Dimensional Imagery in the Process of Learning Architecture" De-Sign: Environment Landscape City 2021, 30 Maggio 2021
2020 :
- D.OPINCARIU, A.MOTU, L.VARTIC, "A Sensorial Approach to Natural Landscape", "Decomposition and Recomposition of Natural Landscape", "Features of Landscape, a Visual Interpretation", De_Sign Environment Landscape City (*a cura di G.Pellegri*), International Conference on Drawing, Genova University Press, pp.219-230, pp.413-422, pp.443-450 ISBN: 978-88-3618-042-4 (eBook)

- A.M.GRAUR,C.MARZA,G.CORSIUC, "Polyhedra in Architectural Design", moNGometrija 2020 7th International Scientific Conference on Geometry and Graphics 18th-21st September 2020. Belgrade, Serbia
- C.MARZA,G.CORSIUC, A.M.GRAUR, "About the Geometry of some Fittings used in Ftat-Oval Ducts", moNGometrija 2020 7th International Scientific Conference on Geometry and Graphics 18th-21st September 2020. Belgrade, Serbia

2019 :

- D.VLAD, A.MOȚU, "A Sight towards the Design Museum. Thinking Big or Thinking Small?", 6th SWS International Scientific Conference on Arts and Humanities ISCAH 2019, Conference Proceedings, ISBN: 978-619-7408-96-6, ISSN: 2682-9940, Vol 6, pp.329-336, DOI: 10.5593/SWS.ISCAH.2019.2/S08.043
- A.MOȚU, D.VLAD, F.LUCA, "Learning to Design. A road-map of Specialized Design Project ", Acta Technica Napocensis: Civil Engineering & Architecture, vol. 62 No. 1, 2019, pp.26-39, ISSN 1221-5848,
- A.M.GRAUR,C.MARZA,G.CORSIUC, "Students Approaches on Warped Surface", The Journal of Industrial Design and Engineering Graphics, 2019
- C.MARZA,G.CORSIUC, A.M.GRAUR, "Study on Modular Houses Design", The Journal of Industrial Design and Engineering Graphics, 2019
- S.TIGĂNAȘ, P.MOLDOVAN, "Arh. Șerban Țigănaș recomandă ateliercetrei- Anamaria și Paul-Mihai Moldovan." Arhitectura 1906: BNA 2018 600 pentru viitor. 2-3/2019 (680-681):48-51, 2019
- L.VARTIC, "Cadrul architectural în pictura flamandă din prima jumătate a secolului al XV-lea", Studia Historia Artium, no. 1/ 2019 .vol 64 (LXIV) dec. UBB Cluj Napoca

Articles (2017-2018): https://drive.google.com/drive/u/0/folders/1Ia11CQJPPSmhnhncm-M37zqgNmK8UGq8

Patents registration

P.MOLDOVAN, A.MOLDOVAN, Oficiul de Stat pentru Invenții și Mărci (OSIM): Certificat de înregistrare desen/model 'Masă', nr. 021763 din 30.01.2018

Participation in exhibitions (2017-2021):

International exhibitions:

L.Vartic: • "Multicultural Identities", (group exhibition), O.N.U. headquarters, New York, S.U.A., 2019

P.Moldovan: • Exibitor IMM Cologne 2020, 13-19 january 2020, Cologne, Germany, Verband der Deutschen Möbelindustrie, VDM, Germany International Fair of Contemporary Furniture and Interior Design • Exibitor - project awarded 2nd Prize, Exhibition of projects participating in the National Competition for the selection of the project that will represent Romania at the 16th edition of the International Exhibition of Architecture - at the Biennale di Venezia, Ministry of Culture and National Identity, MAE, ICR and UAR, Exhibition of projects participating in the National Competition for the selection of the project that will represent Romania at the 16th edition of the International Exhibition of Architecture - at the Biennale di Venezia.

National exhibitions: https://drive.google.com/drive/u/0/folders/1Ia11CQJPPSmhnhncm-M37zqgNmK8UGq8

Organization of exhibitions:

• "Exhibition of student projects"(Architecture Design studios 1-6 / Forms study / Furniture Design Studio / Interior Architecture Studio) Ethnographic Museum of Transylvania, may 2021, coord:D.Opincariu • FAUHAUS Workshop – Creative discipline group (July 2021, July 2019), coord. D.Opincariu • "Exhibition of student projects - Discipline group: Forms study, Perspective, G.F.A., Furniture Design & Interior Architecture Specialized Projects" - "Romulus Ladea" High School of Visual Arts (May 2018, May 2019); Ethnographic Museum of Transylvania (April 2019), org.team: D.Vlad, D.Opincariu, A.Arama, A.Motu, L.Vartic, P.Moldovan, F.Luca • "Community center in Cojocna" - in partnership with Cojocna Gymnasium School (within the *Scoala Altfel* Program) and Cojocna City Hall, 2017, coordinator: D.Vlad.

Projects: D.VLAD, F.LUCA, A.MOȚU, Interior design – the Entrance Pavilion of the National Ethnographic Park "Romulus Vuia". Project realized within the partnership between INVENTARIUM research group, A.C.D.S. and the Ethnographic Museum of Transylvania - no. registr. UTCN 7571 / 02.04.2018

Prizes, nominations and selections for national and international competitions:

• Leonard VARTIC - The Romanian Pavilion at the Venice Architecture Biennale, 2020 , *third prize (member within a group) • Dorina VLAD – Ascanio Damian Research Award, 2005 • Adrian ARAMĂ – The Romanian Pavilion at the Venice Architecture Biennale, 2016 (member within a group)

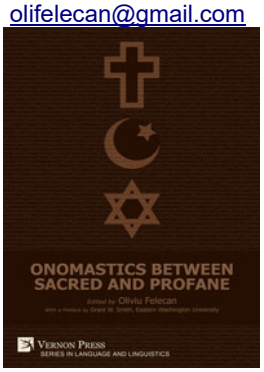
The offer addressed to the economic environment

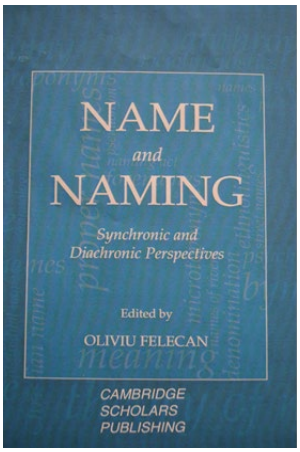
Research & development	Studies and collaborations with economic, educational, cultural and administrative institutions and organizations regarding architecture and decorative arts, contemporary design, architectural technology; Studies - investigation and identification of sustainable development directions for local communities (in collaboration with other institutions, organizations, research groups); Rural and urban heritage and communities – identification and research of architectural, natural, social, cultural values and their current development; Involvement of the economic organizations in the academic process, exhibition organization and participation; collaborations with other educational partners.
Consulting	•Assoc.Prof.PhD.Arch. D. VLAD: CNMC (Comisia Nationala a Muzeelor si Colectiilor – Museums and Collections National Committee) certified expert for meaningful artistic goods-furniture. •Assoc.Prof.PhD.Arch. P. MUTICĂ: BLETJ Cluj (Local Bureau for Technical and Judicial Expertise for Cluj) judicial expert with the Tribunal of Cluj County
Training	Competition organization, exhibitions, study visits – their aim is to create a link between the university (FAUP) and the economic or cultural environment (collaborations with museums, private cultural organizations)

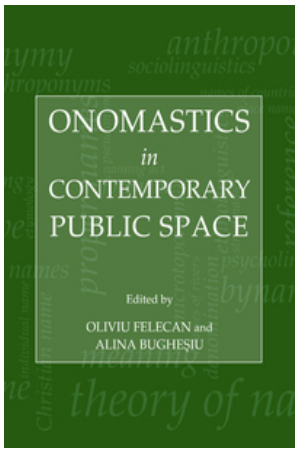
CENTER OF ONOMASTICS

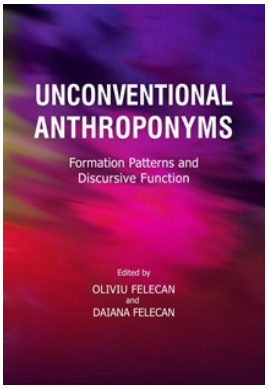
Contact details

Name	**Center of Onomastics**
Acronym	**CO**
Logo	Center of Onomastics
Site	https://onomasticafelecan.ro/
Address	76 Victoria Street, Baia Mare
Faculty Department	**Faculty of Letters, Department of Philology and Cultural Studies**
Telephone	+40 743770876
Director	Prof. Dr. Hab. Oliviu Felecan
e-mail	olifelecan@yahoo.com olifelecan@gmail.com









Areas of expertise

Domain: philology, humanities (onomastics, socio-/psycho-/ethnolinguistics, anthropological linguistics, pragmatics). Philology can be defined as the scientific knowledge of the entire activity and life of a certain people, in a given period of its existence. As a sub-field of philology, linguistics studies human language, exploring its mechanisms by means of comparative, synchronic and diachronic studies of languages.

Team

Prof. Dr. Hab. Oliviu Felecan, Assoc. Prof. Dr. Hab. Daiana Felecan, Dr. Alina Bughesiu, Assoc. Prof. Mihaela Munteanu-Siserman, Dr. Adelina Mihali

Representative projects

"**Multiethnic Connections in the Anthroponymy of Maramureş, a Central European Area**", IDEI, (2009)
"**Onomastics in Contemporary Romanian Public Space: Socio- and Psycholinguistic Research**", TE grant, (2012)
"**Unconventional Romanian Anthroponyms in European Context: Formation Patterns and Discursive Function**", TE grant, (2011)

Significant results

Books:

1. O. Felecan, *Onomastics between sacred and profane*, Wilmington: Vernon Press, 2019, 434 p
2. D. Felecan, *Întâlnire cu semnele textului. 18 popasuri de lectură critică*, București: Editura Academiei Române, 2018.
3. O. Felecan, *Proceedings of the Fourth International Conference on Onomastics "Name and Naming". Sacred and Profane in Onomastics*, Cluj-Napoca: Editura Mega, Editura Argonaut, 2017, 1255 p.
4. A. Bugheşiu, *Trade Names in Contemporary Romanian Public Space*, 2015, 259 pages
5. A. Mihali, *Toponymy of the Maramureș County. The Superior Valley of the Vișeu River*, 2015, 255 pages
6. M. Munteanu Siserman, *Names and Senses: Semantic Correspondences in Onomastic Configurations*, 2015, 200p
7. O. Felecan, *Proceedings of the Third International Conference on Onomastics "Name and Naming". Conventional/ Unconventional in Onomastics*, 2015, 1010 pages
8. D. Felecan, *Pragmatics of Unconventional Names and Naming: From Theoretical Paradigms to Discursive Practices*,

2014, 302 pages
9. O. Felecan, D. Felecan, *Unconventional Anthroponyms: Formation Patterns and Discursive Function*, 2014, 536 p.
10. O. Felecan, A. Bugheşiu, *Onomastics in Contemporary Public Space,* 2013, 639 pages
11. O. Felecan, *Proceedings of the Second International Conference on Onomastics "Name and Naming". Onomastics in Contemporary Public Space*, 2013, 1115 pages
12. O. Felecan, *An Onomastic Excursion into Contemporary Romanian Public Space*, 2013, 206 pages

Studies:

1. O.Felecan, *Oiconymic transformations in Romania in the first half of twentieth century*, în „Dacoromania", XXIV, nr. 1/2019, p. 57-65.
2. O.Felecan, N. Felecan, *Toponymic Homonymies and Metonymies: Names of Rivers vs Names of Settlements*, în „Onomàstica. Anuari of the Societat d'Onomàstica", nr. 5/2019, p. 91-114.
3. O. Felecan, *Transylvania - A Toponymic Perspective*, în „Onomastica Uralica", nr. 12/2018, p. 289-299.
4. A. Bugheșiu, *Imaginative Names for Imaginary Friends*, în British and American Studies, 24, 2018, p. 227-236.
5. Felecan, Oliviu, Man of word. In honorem Gheorghe Chivu PHILOLOGICA JASSYENSIA Volume: 13 Issue: 2 Pages: 302-303 Published: 2017
6. Felecan, Oliviu, Oikonymic Transformations in Romania in the Second Half of the Twentieth Century NAMES-A JOURNAL OF ONOMASTICS Volume: 65 Issue: 2 Pages: 78-87 Published: 2017
7. D. Felecan, O. Felecan, "Nicknames of Romanian Politicians after 1989, în Philologica Jassyensia", an XII, nr. 2 (24), 2016, *ALTERNATIVES*, Vol.24, nr.2, pp.191-207, 2016.
8. D. Felecan, A. Bughesiu, „Să nu [în]juri strâmb…". Înjurături românești care conțin antroponime (II): niveluri constitutive și semantic-referențiale, în „Philologica Jassyensia", *ALTERNATIVES*, Vol. 1(23), nr.1(23), pp.47-55, 2016.
9. O. Felecan, N. Felecan, "Denumiri ale băuturilor spirtoase tradiționale românești", *Dacoromania*, Vol.1, nr.XXI, pp.46-59, 2016.
10. M. Munteanu Siserman, "DE QUELQUES STRUCTURES LINGUISTIQUES DES LANGUES SPÉCIALISÉES", *Acta Technica Napocensis*, Vol.16, nr.4, pp.93-102, 2016.
11. O. Felecan, A Psycholinguistic, "Approach to Nicknaming (With Reference to Nicknames Given by Students to Teachers) ", *The 25th International Congress of Onomastic Sciences*, Glasgow, Vol.3, pp.65-81, 2016.
12. D. Felecan, A. Bughesiu, "Anthroponyms in Taboo Discourse: The Case of Romanian Swear Phrases", *25th International Congress of Onomastic Sciences*, 25th - 29th August, 2014, Glasgow, Marea Britanie, Vol.4, pp.21-32, 2016.
13. O. Felecan, "Borders and Ethnic Identities Reflected in Street Names from Transylvanian Localities", in *Transylvanian Review*, (ISI) vol. XXIV, Supplement nr. 1/ 2015 Regionalization in Globalization, pp. 229-244.
14. D. Felecan, A. Bugheșiu, "Swear Not at All"–Romanian Anthroponym-Based Expletives (I): Theoretical Sketches", in *Philologica Jassyensia* (ISI), Nr. 2 (22)/ 2015, pp. 57-67.
15. A. Bugheşiu, "Romanian Brand Names as Cultural Mediators", in *Names in the Economy: Cultural Prospects*, 2013, pp. 73-88
16. D. Felecan, "Aspetti della cortesia e della scortesia verbale nei dibattiti e nei comunicati stampa televisivi (il caso della campagna elettorale presidenziale della Romania, 2009)", vol. VI, in *Actas del XXVI Congreso Internacional de Lingüística y de Filología Romanicas*, Valencia, 2010, Berlin, Walter de Gruyter, 2013, pp. 463-474
17. O. Felecan, "Il contatto linguistico romeno-romanzo attuale, riflesso nell'antroponimia", in *Emili Casanova Herrero, Cesáreo Calvo Rigual (eds.) Actas de 26é Congreso Internacional de Lingüística y de Filología Románicas, Valencia 2010*, Berlin/ Boston: De Gruyter, 2013, vol. V, Sección 6: Descripción histórica y/o sincrónica de las lenguas románicas: onomástica (toponimia y antroponimia), pp. 123-134
18. D. Felecan, "Nume proprii și denominații propriale, între monovalență și polifonie (Abordare pragmalingvistică)", in *The Proceedings of the European Integration – Between Tradition and Modernity Congress* (ISI), vol. 5, 2013, pp. 306-316
19. O. Felecan, "Licensed Unconventional Anthroponyms in the Age of European Integration The Case of Number Plates", in *Proceedings of the European Integration – between Tradition and Modernity Congress* (ISI), Târgu-Mureș, Editura Universității „Petru Maior", Volume Number 5, 2013, pp. 445-455
20. M. Munteanu Siserman, "Names of Autochthonous Dishes in Relation to Globalisation (Onomastic and Sociocultural Approaches)", in *Proceedings of the European Integration – between Tradition and Modernity Congress* (ISI), Târgu-Mureș, Editura Universității „Petru Maior", Volume Number 5, 2013, pp. 431-443
21. A. Mihali, „Aspects of Identity and Alterity in the Names of Romanian Public Space. Ukrainian community from Maramureș" in *Acta onomastica*, LIV, 2013, Praga, pp. 205-216

The offer addressed to the economic environment

Research & develop-ment	Research and development in the field of philology is mainly achieved with the help of humanities. Sociolinguistics, psycholinguistics, ethnolinguistics, and anthropological linguistics can help improve the economic environment theoretically. Through the interdisciplinary nature of the projects undergone within the Center of Onomastics, our teamwork could be employed in other fields, such as sociology, psychology, economy, marketing, advertising etc.
Consulting	Consulting may regard the choice of an appropriate name for businesses, which should be tightly connected to the impact that such institutions perform in society, but also the correct usage of Romanian in the direct relationship with customers, or the one established (indirectly) by means of websites and advertisements. At the same time, we could offer consulting for the organization of international scientific events and for editing scientific journals.

CENTRE FOR IMAGOLOGICAL STUDIES AND FOR THE RESEARCH OF THE LITERARY AND SOCIAL IMAGINARIUM

Contact details

Name	Centre for Imagological Studies and for the Research of the Literary and Social Imaginarium
Acronym	**CSI-CILS**
Logo	CENTRUL DE STUDII IMAGOLOGICE ȘI DE CERCETARE A IMAGINARULUI LITERAR ȘI SOCIAL C S I C I L S
Site	Website address AND link to the document posted on: http://research.utcluj.ro/index.php/domenii-de-cercetare.html
Address	Victoriei 76, Baia Mare
Faculty Department	**Faculty of Letters, UTCN - CUNBM** **Department of Philology and Cultural Studies**
Telephone	+4 0262 276305
Fax	+4 0262 276305
Director	George Achim
e-mail	achimg_aut@yahoo.com

Areas of expertise

1. Identification of structures of the literary imaginary related to social, community and ethnical archetypes.

2. Researches of oral history regarding historical events reflected in the collective memory.

3. Identification and description of occupational models or human cohabitation that are lost or far away in time.

Team

Professor George Achim, PhD; Professor Cornel Munteanu, PhD; Associate Professor Delia Suiogan, PhD; Associate Professor Mircea Farcaș, PhD; Lecturer Claudiu Fărcaș, PhD; Alina Dorle, PhD, Adrian Oros, PhD. PhD Students: Felicia Mich, Ligia Bujor; Angelica Ionce, Florin-Vasile Pop.

Representative projects

Cercetare socio-antropologică și de istorie orală privind relația inter-etnică și multiculturală în arealul Ardud-Beltiug, județul Satu Mare; iulie 2017-martie 2018.

Significant results

Articles in ISI rated journals, in the past 5 years:

1. George Achim**,** *Onomastica "imperiala" central-europeana si terminologia "K und K" în literatura română* proceedings of the International Conference on Onomastics "Name and Naming" - ICONN 3, ISI; http://onomasticafelecan.ro/iconn3/proceedings/5_1_Achim_George_ICONN_3.pdf

2. George Achim, *O zonă de sincretism cultural central-european (arealul sătmărean Ardud-Beltiug), privită prin lentilele istoriei orale I*, în Memoria Etnologica, nr. 70-71 An XIX/ ianuarie-iunie 2019, ISSN: 1582-8573 BDI EBSCO https://www.memoria-ethnologica.ro/articol/anarhia-formelor-pseudotraditie-si-alterare-in-satul-romanesc-contemporan/

3. George Achim, *Anarhia formelor. Pseudotraditie și alterare în satul romanesc contemporan*, Memoria Etnologica, nr.72-73, An XIX, 2019, ISSN: 1582-8573 BDI EBSCO

4. Delia Suiogan, *Dinamism și stabilitate în receptarea structurilor simbolice***,** Buletin Ştiinţific, Fascicula Filologie, Seria A, Vol. XXVIII, 2018, indexat BDI CEEOL, pp, CEEOL, Frankfurt, Germania, Copernicus, DOI: 10.37193/BSFF, 475-481

5. Delia Suiogan, *Means Of (Re)assuming Identity – Recovering Meaning, Memoria Ethnologica*, revistă de patrimoniu ethnologic şi memorie culturală, An XVIII nr. 68 - 69 , iulie – decembrie, 2018, Baia Mare, indexat EBSCO, pp. 122-131

6. Florin Pop, LE RECOURS AUX VALEURS TRADITIONNELLES. REPERES PAREMIOLOGIQUES, publicat in 2018 în Anuarul de Lingvistică și Istorie Literară – t. LVIII, 2018, Bucureşti, p. 159–168 (ALIL is indexed EBSCO); http://alil.academiaromana-is.ro/wp-content/uploads/2020/10/FLORIN-VASILE-POP-Le-recours-aux-valeurs-traditionnelles-Reperes-paremiologiques.pdf

Products and books:

George Achim, ***Sita de ceară –Istorii din istoria unui ținut transilvan,*** Editura Școala Ardeleană, Cluj-Napoca, 2017, ISBN 978-606-797-224-5, pp.498

The Wax Sieve – Histories from the History of a Transylvanian County, Scoala Ardeleana Publishing House, Cluj-Napoca, 2017, ISBN 978-606-797-224-5, pp.498

The offer addressed to the economic environment

Research & development	The projects can take the shape of a monographic research, which allows them to obtain a social and cultural impact in the communities where research has been conducted. In this respect, the results of the research regarding the multi-ethnic population in the Southern part of Satu Mare County had a deep impact and a concrete echo in the investigated and researched communities.

RESEARCH PUBLICATIONS

ISI PUBLICATIONS - 2020

[1] T. Acar, A. Aral, and I. Rasa, "Iterated Boolean Sums of Bernstein Type Operators," Numerical Functional Analysis and Optimization, vol. 41, no. 12, pp. 1515-1527, Sep 2020, doi: 10.1080/01630563.2020.1777160.

[2] A. M. Acu, M. Dancs, and V. A. Radu, "REPRESENTATIONS FOR THE INVERSES OF CERTAIN OPERATORS," Communications on Pure and Applied Analysis, vol. 19, no. 8, pp. 4097-4109, Aug 2020, doi: 10.3934/cpaa.2020182.

[3] A. M. Acu, M. Heilmann, and I. Rasa, "Strong Converse Results for Linking Operators and Convex Functions," Journal of Function Spaces, vol. 2020, Dec 2020, Art no. 4049167, doi: 10.1155/2020/4049167.

[4] A. M. Acu, M. Heilmann, and I. Rasa, "Iterates of convolution-type operators," Positivity, vol. 25, no. 2, pp. 495-506, Apr 2021, doi: 10.1007/s11117-020-00773-7.

[5] A. M. Acu, L. Hodis, and I. Rasa, "MULTIVARIATE WEIGHTED KANTOROVICH OPERATORS," Mathematical Foundations of Computing, vol. 3, no. 2, pp. 117-124, May 2020, doi: 10.3934/mfc.2020009.

[6] A. M. Acu, S. Hodis, and I. Rasa, "Estimates for the Differences of Certain Positive Linear Operators," Mathematics, vol. 8, no. 5, May 2020, Art no. 798, doi: 10.3390/math8050798.

[7] A. M. Acu, A. Maduta, D. Otrocol, and I. Rasa, "Inequalities for Information Potentials and Entropies," Mathematics, vol. 8, no. 11, Nov 2020, Art no. 2056, doi: 10.3390/math8112056.

[8] A. M. Acu and I. Rasa, "A C-0-Semigroup of Ulam Unstable Operators," Symmetry-Basel, vol. 12, no. 11, Nov 2020, Art no. 1844, doi: 10.3390/sym12111844.

[9] A. M. Acu and I. Rasa, "Elementary hypergeometric functions, Heun functions, and moments of MKZ operators," Revista De La Real Academia De Ciencias Exactas Fisicas Y Naturales Serie a-Matematicas, vol. 115, no. 1, Nov 2020, Art no. 20, doi: 10.1007/s13398-020-00943-y.

[10] A. M. Acu and I. Rasa, "Ulam Stability for the Composition of Operators," Symmetry-Basel, vol. 12, no. 7, Jul 2020, Art no. 1159, doi: 10.3390/sym12071159.

[11] O. V. Ageev, M. Jakubowski, and L. Giurgiulescu, "MATHEMATICAL SIMULATION OF DEFORMATION FRICTION FORCE DURING FOOD MATERIAL CUTTING," Carpathian Journal of Food Science and Technology, vol. 12, no. 4, pp. 5-11, 2020, doi: 10.34302/crpjfst/2020.12.4.1.

[12] C. D. Alecsa, S. C. Laszlo, and T. Pinta, "An Extension of the Second Order Dynamical System that Models Nesterov's Convex Gradient Method," Applied Mathematics and Optimization, vol. 84, no. 2, pp. 1687-1716, Oct 2021, doi: 10.1007/s00245-020-09692-1.

[13] C. D. Alecsa, S. C. Laszlo, and A. Viorel, "A gradient-type algorithm with backward inertial steps associated to a nonconvex minimization problem," Numerical Algorithms, vol. 84, no. 2, pp. 485-512, Jun 2020, doi: 10.1007/s11075-019-00765-z.

[14] L. Alexa, V. Maier, A. Serban, and R. Craciunescu, "Engineers Changing the World: Education for Sustainability in Romanian Technical Universities-An Empirical Web-Based Content Analysis," Sustainability, vol. 12, no. 5, Mar 2020, Art no. 1983, doi: 10.3390/su12051983.

[15] M. Alexandru, L. Czumbil, R. Andolfato, H. Nouri, and D. D. Micu, "Investigating the Effect of Several Model Configurations on the Transient Response of Gas-Insulated Substation during Fault Events Using an Electromagnetic Field Theory Approach," Energies, vol. 13, no. 23, Dec 2020, Art no. 6231, doi: 10.3390/en13236231.

[16] A. Ali, A. H. Alkhaldi, and L. I. Piscoran, "Stable currents and homology groups in a compact CR-warped product submanifold with negative constant sectional curvature," Journal of Geometry and Physics, vol. 148, Feb 2020, Art no. 103566, doi: 10.1016/j.geomphys.2019.103566.

[17] A. Ali, A. H. Alkhaldi, L. I. Piscoran, and R. Ali, "Eigenvalue inequalities for the p-Laplacian operator on C-totally real submanifolds in Sasakian space forms," Applicable Analysis, doi: 10.1080/00036811.2020.1758307.

[18] A. Ali, F. Mofarreh, N. Alluhaibi, and L. I. Piscoran, "Null homology in warped product Lagrangian submanifolds of the nearly Kaehler S-6 and its applications," Journal of Geometry and Physics, vol. 158, Dec 2020, Art no. 103859, doi: 10.1016/j.geomphys.2020.103859.

[19] G. Ali et al., "IoT Based Smart Parking System Using Deep Long Short Memory Network," Electronics, vol. 9, no. 10, Oct 2020, Art no. 1696, doi: 10.3390/electronics9101696.

[20] K. F. Aljanaideh, O. Furdui, and D. S. Bernstein, "On the McMillan degree of full-normal-rank transfer functions," International Journal of Control, vol. 94, no. 12, pp. 3439-3447, Dec 2021, doi: 10.1080/00207179.2020.1766701.

[21] L. Anastasiu, O. Gavris, and D. Maier, "Is Human Capital Ready for Change? A Strategic Approach Adapting Porter's Five Forces to Human Resources," Sustainability, vol. 12, no. 6, Mar 2020, Art no. 2300, doi: 10.3390/su12062300.

[22] D. Ancau, N. M. Roman, and M. Ancau, "Analyzing Error Potentials Using Stacking Algorithms," Journal of Medical and Biological Engineering, vol. 40, no. 4, pp. 575-581, Aug 2020, doi: 10.1007/s40846-020-00550-7.

[23] I. Anghel et al., "Smart Environments and Social Robots for Age-Friendly Integrated Care Services," International

Journal of Environmental Research and Public Health, vol. 17, no. 11, Jun 2020, Art no. 3801, doi: 10.3390/ijerph17113801.

[24] S. B. Angyus et al., "Interference-free, green microanalytical method for total mercury and methylmercury determination in biological and environmental samples using small-sized electrothermal vaporization capacitively coupled plasma microtorch optical emission spectrometry," Talanta, vol. 217, Sep 2020, Art no. 121067, doi: 10.1016/j.talanta.2020.121067.

[25] M. Antal, C. Pop, T. Cioara, I. Anghel, I. Salomie, and F. Pop, "A System of Systems approach for data centers optimization and integration into smart energy grids," Future Generation Computer Systems-the International Journal of Escience, vol. 105, pp. 948-963, Apr 2020, doi: 10.1016/j.future.2017.05.021.

[26] T. A. Antal, "PRINCIPLES OF MOTION SIMULATION OF A 2 DOF RR PLANAR MANIPULATOR USING JAVA SWING," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 7-16, Mar 2020.

[27] T. A. Antal, "USING NETWORKING SERVICES FOR REMOTE ACCESS TO A JAVA ROBOT SIMULATOR," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 17-20, Mar 2020.

[28] G. Armencea et al., "Technical queries of a 3D design custom-made implant made from titanium particles for maxillofacial bone reconstruction," Particulate Science and Technology, vol. 38, no. 6, pp. 676-684, Aug 2020, doi: 10.1080/02726351.2019.1578846.

[29] A. A. Armenio et al., "Nanostructured templates for critical current density enhancement in YBa(2)Cu(3)O(7-x)films," Superconductor Science & Technology, vol. 33, no. 9, Sep 2020, Art no. 094003, doi: 10.1088/1361-6668/ab9f65.

[30] M. Atashafrouz, B. Najafi, and L. I. Piscoran, "LEFT INVARIANT (alpha, beta)-METRICS ON 4-DIMENSIONAL LIE GROUPS," Facta Universitatis-Series Mathematics and Informatics, vol. 35, no. 3, pp. 727-740, 2020, doi: 10.22190/fum12003727a.

[31] H. Attouch and S. C. Laszlo, "NEWTON-LIKE INERTIAL DYNAMICS AND PROXIMAL ALGORITHMS GOVERNED BY MAXIMALLY MONOTONE OPERATORS," Siam Journal on Optimization, vol. 30, no. 4, pp. 3252-3283, 2020, doi: 10.1137/20m1333316.

[32] H. Attouch and S. C. Laszlo, "Continuous Newton-like Inertial Dynamics for Monotone Inclusions," Set-Valued and Variational Analysis, vol. 29, no. 3, pp. 555-581, Sep 2021, doi: 10.1007/s11228-020-00564-y.

[33] A. Avram, O. Matei, C. M. Pintea, and P. C. Pop, "Context Quality Impact in Context-Aware Data Mining for Predicting Soil Moisture," Cybernetics and Systems, vol. 51, no. 7, pp. 668-684, Oct 2020, doi: 10.1080/01969722.2020.1798642.

[34] A. Avram, O. Matei, C. Pintea, and C. Anton, "Innovative Platform for Designing Hybrid Collaborative & Context-Aware Data Mining Scenarios," Mathematics, vol. 8, no. 5, May 2020, Art no. 684, doi: 10.3390/math8050684.

[35] A. M. C. Babau, V. Micle, G. E. Damian, and I. M. Sur, "PRELIMINARY INVESTIGATIONS REGARDING THE POTENTIAL OF Robinia pseudoacacia L. (Leguminosae) IN THE PHYTOREMEDIATION OF STERILE DUMPS," Journal of Environmental Protection and Ecology, vol. 21, no. 1, pp. 46-55, 2020.

[36] A. R. Baias, F. Blaga, and D. Popa, "On the best Ulam constant of a first order linear difference equation in Banach spaces," Acta Mathematica Hungarica, vol. 163, no. 2, pp. 563-575, Apr 2021, doi: 10.1007/s10474-020-01098-3.

[37] A. R. Baias and D. M. Kerekes, "On the Dini-Hadamard-like coderivative of the difference of two single-valued mappings," Rendiconti Del Circolo Matematico Di Palermo, vol. 70, no. 1, pp. 295-310, Apr 2021, doi: 10.1007/s12215-020-00498-2.

[38] A. R. Baias and D. Popa, "On the best Ulam constant of the second order linear differential operator," Revista De La Real Academia De Ciencias Exactas Fisicas Y Naturales Serie a-Matematicas, vol. 114, no. 1, Jan 2020, Art no. 23, doi: 10.1007/s13398-019-00776-4.

[39] A. R. Baias and D. Popa, "On Ulam Stability of a Linear Difference Equation in Banach Spaces," Bulletin of the Malaysian Mathematical Sciences Society, vol. 43, no. 2, pp. 1357-1371, Mar 2020, doi: 10.1007/s40840-019-00744-6.

[40] A. R. Baias and D. Popa, "On Ulam stability of a third order linear difference equation in Banach spaces," Aequationes Mathematicae, vol. 94, no. 6, pp. 1151-1170, Dec 2020, doi: 10.1007/s00010-020-00722-5.

[41] A. R. Baias, D. Popa, and I. Rasa, "Ulam stability of a successive approximation equation," Journal of Fixed Point Theory and Applications, vol. 22, no. 2, May 2020, Art no. 41, doi: 10.1007/s11784-020-00777-6.

[42] D. Banabic, F. Barlat, O. Cazacu, and T. Kuwabara, "Advances in anisotropy of plastic behaviour and formability of sheet metals," International Journal of Material Forming, vol. 13, no. 5, pp. 749-787, Sep 2020, doi: 10.1007/s12289-020-01580-x.

[43] T. Becea and H. Valean, "A Microservices based Approach for City Traffic Simulation," International Journal of Advanced Computer Science and Applications, vol. 11, no. 2, pp. 60-66, Feb 2020.

[44] S. Becze, P. Berce, and N. Panc, "DEMONSTRATION OF TURBOCHARGERS BALANCING PROTOTYPE MACHINE FUNCTIONALITY IN RELEVANT OPERATING CONDITIONS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 419-424, Nov 2020.

[45] M. S. Beldean-Galea et al., "Evaluation of indoor air pollutants in 100 retrofit residential buildings from Romania during cold season," Journal of Cleaner Production, vol. 277, Dec 2020, Art no. 124098, doi: 10.1016/j.jclepro.2020.124098.

[46] B. Belean, R. Gutt, C. Costea, and O. Balacescu, "Microarray Image Analysis: From Image Processing Methods to Gene Expression Levels Estimation," Ieee Access, vol. 8, pp. 159196-159205, 2020, doi: 10.1109/access.2020.3019844.

[47] H. G. Beleiu, V. Maier, S. G. Pavel, I. Birou, C. S. Pica, and P. C. Darab, "Harmonics Consequences on Drive Systems with Induction Motor," Applied Sciences-Basel, vol. 10, no. 4, Feb 2020, Art no. 1528, doi: 10.3390/app10041528.

[48] I. Benguettat-El Mokhtari et al., "Investigation of the correlation between perpendicular magnetic anisotropy, spin mixing conductance and interfacial Dzyaloshinskii-Moriya interaction in CoFeB-based systems," Journal of Physics D-Applied Physics, vol. 53, no. 50, Dec 2020, Art no. 505003, doi: 10.1088/1361-6463/abb488.

[49] I. Benguettat-El Mokhtari et al., "Perpendicular magnetic anisotropy and interfacial Dzyaloshinskii-Moriya interaction in as grown and annealedX/Co/Yultrathin systems," Journal of Physics-Condensed Matter, vol. 32, no. 49, Nov 2020, Art no. 495802, doi: 10.1088/1361-648X/abb0a8.

[50] I. Benguettat-El Mokhtari et al., "Interface phenomena in ferromagnet/TaOx-based systems: Damping, perpendicular magnetic anisotropy, and Dzyaloshinskii-Moriya interaction," Physical Review Materials, vol. 4, no. 12, Dec 2020, Art no. 124408, doi: 10.1103/PhysRevMaterials.4.124408.

[51] I. Benguettat-El Mokhtari et al., "Spin Pumping and Magnetic Anisotropy in La2/3Sr1/3MnO3/Pt Systems," Physica Status Solidi B-Basic Solid State Physics, vol. 257, no. 12, Dec 2020, Art no. 2000265, doi: 10.1002/pssb.202000265.

[52] P. Bere, C. Neamtu, and R. Udroiu, "Novel Method for the Manufacture of Complex CFRP Parts Using FDM-based Molds," Polymers, vol. 12, no. 10, Oct 2020, Art no. 2220, doi: 10.3390/polym12102220.

[53] V. Berinde, "Approximating fixed points of enriched nonexpansive mappings in Banach spaces by using a retraction-displacement condition," Carpathian Journal of Mathematics, vol. 36, no. 1, pp. 27-34, 2020.

[54] V. Berinde, "Carpathian Journal of Mathematics celebrates 30 years of publication," Carpathian Journal of Mathematics, vol. 36, no. 3, pp. I-IV, 2020.

[55] V. Berinde and M. Pacurar, "Approximating fixed points of enriched contractions in Banach spaces," Journal of Fixed Point Theory and Applications, vol. 22, no. 2, Mar 2020, Art no. 38, doi: 10.1007/s11784-020-0769-9.

[56] V. Berinde and I. A. Rus, "Asymptotic Regularity, Fixed Points and Successive Approximations," Filomat, vol. 34, no. 3, pp. 965-981, 2020, doi: 10.2298/fil2003965b.

[57] I. Bilbao, J. Bilbao, C. Feniser, and A. Borsa, "PRACTICAL DATA MINING APPLIED IN STEEL COILS MANUFACTURING," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 287-296, Sep 2020.

[58] V. Bintintan et al., "New inductive proximity sensor platform for precise localization of small colorectal tumors," Materials Science & Engineering C-Materials for Biological Applications, vol. 106, Jan 2020, Art no. 110146, doi: 10.1016/j.msec.2019.110146.

[59] I. Birlescu, M. Husty, C. Vaida, B. Gherman, P. Tucan, and D. Pisla, "Joint-Space Characterization of a Medical Parallel Robot Based on a Dual Quaternion Representation of SE(3)," Mathematics, vol. 8, no. 7, Jul 2020, Art no. 1086, doi: 10.3390/math8071086.

[60] I. Birs, S. Folea, O. Prodan, E. Dulf, and C. Muresan, "An Experimental Tuning Approach of Fractional Order Controllers in the Frequency Domain," Applied Sciences-Basel, vol. 10, no. 7, Apr 2020, Art no. 2379, doi: 10.3390/app10072379.

[61] I. Birs, I. Nascu, C. Ionescu, and C. Muresan, "Event-based fractional order control," Journal of Advanced Research, vol. 25, pp. 191-203, Sep 2020, doi: 10.1016/j.jare.2020.06.024.

[62] F. Blaga, L. Mesaros, D. Popa, G. Pugna, and I. Rasa, "BOUNDS FOR SOLUTIONS OF LINEAR DIFFERENTIAL EQUATIONS AND ULAM STABILITY," Miskolc Mathematical Notes, vol. 21, no. 2, pp. 653-664, 2020, doi: 10.18514/mmn.2020.2903.

[63] C. V. Bobb, "The Place of phronesis in Philosophical Hermeneutics. A Brief Overview and a Critical Question," Hermeneia, no. 25, pp. 29-36, 2020.

[64] F. Bode, A. Meslem, C. Patrascu, and I. Nastase, "Flow and wall shear rate analysis for a cruciform jet impacting on a plate at short distance," Progress in Computational Fluid Dynamics, vol. 20, no. 3, pp. 169-185, 2020, doi: 10.1504/pcfd.2020.107276.

[65] L. Bolundut, P. Pascuta, E. Culea, M. Bosca, L. Pop, and R. Stefan, "Spectroscopic study of some new cobalt-doped tellurite glass-ceramics," Journal of Materials Science, vol. 55, no. 23, pp. 9962-9971, Aug 2020, doi:

10.1007/s10853-020-04749-6.

[66] O. Boncalo, A. Amaricai, and Z. Lendek, "Fault Tolerant Digital Data-Path Design via Control Feedback Loops," Electronics, vol. 9, no. 10, Oct 2020, Art no. 1721, doi: 10.3390/electronics9101721.

[67] S. I. Borlea, A. E. Tiuc, O. Nemes, H. Vermesan, and O. Vasile, "Innovative Use of Sheep Wool for Obtaining Materials with Improved Sound-Absorbing Properties," Materials, vol. 13, no. 3, Feb 2020, Art no. 694, doi: 10.3390/ma13030694.

[68] R. I. Bot, E. R. Csetnek, and S. C. Laszlo, "A primal-dual dynamical approach to structured convex minimization problems," Journal of Differential Equations, vol. 269, no. 12, pp. 10717-10757, Dec 2020, doi: 10.1016/j.jde.2020.07.039.

[69] R. I. Bot, E. R. Csetnek, and S. C. Laszlo, "A second-order dynamical approach with variable damping to nonconvex smooth minimization," Applicable Analysis, vol. 99, no. 3, pp. 361-378, Feb 2020, doi: 10.1080/00036811.2018.1495330.

[70] R. I. Bot, E. R. Csetnek, and S. C. Laszlo, "Tikhonov regularization of a second order dynamical system with Hessian driven damping," Mathematical Programming, vol. 189, no. 1-2, pp. 151-186, Sep 2021, doi: 10.1007/s10107-020-01528-8.

[71] N. A. Braic, C. Raducan, M. Neag, M. Topa, and V. Ionescu, "Ascertaining the root-cause of discrepancies between simulations and measurements for a SC DC-DC converter," Romanian Journal of Information Science and Technology, vol. 23, no. 4, pp. 333-353, 2020.

[72] L. G. Bravo et al., "Psychometric analysis of a measure of acceptance of new technologies (UTAUT), applied to the use of haptic virtual simulators in dental students," European Journal of Dental Education, vol. 24, no. 4, pp. 706-714, Nov 2020, doi: 10.1111/eje.12559.

[73] R. Brehar et al., "Comparison of Deep-Learning and Conventional Machine-Learning Methods for the Automatic Recognition of the Hepatocellular Carcinoma Areas from Ultrasound Images," Sensors, vol. 20, no. 11, Jun 2020, Art no. 3085, doi: 10.3390/s20113085.

[74] N. Brisebarre, M. Joldes, J. M. Muller, A. M. Nanes, and J. Picot, "Error Analysis of Some Operations Involved in the Cooley-Tukey Fast Fourier Transform," Acm Transactions on Mathematical Software, vol. 46, no. 2, Jun 2020, Art no. 11, doi: 10.1145/3368619.

[75] M. Bud et al., "Comparative analysis of preclinical dental students' working postures using dental loupes and dental operating microscope," European Journal of Dental Education, vol. 25, no. 3, pp. 516-523, Aug 2021, doi: 10.1111/eje.12627.

[76] L. Busoniu, J. Ben Rejeb, I. Lal, I. C. Morarescu, and J. Daafouz, "Optimistic minimax search for noncooperative switched control with or without dwell time," Automatica, vol. 112, Feb 2020, Art no. 108632, doi: 10.1016/j.automatica.2019.108632.

[77] L. Busoniu et al., "Learning control for transmission and navigation with a mobile robot under unknown communication rates," Control Engineering Practice, vol. 100, Jul 2020, Art no. 104460, doi: 10.1016/j.conengprac.2020.104460.

[78] S. Buzura, B. Iancu, V. Dadarlat, A. Peculea, and E. Cebuc, "Optimizations for Energy Efficiency in Software-Defined Wireless Sensor Networks," Sensors, vol. 20, no. 17, Sep 2020, Art no. 4779, doi: 10.3390/s20174779.

[79] L. Cadariu, D. Popa, and I. Rasa, "Ulam Stability of a Second Linear Differential Operator with Nonconstant Coefficients," Symmetry-Basel, vol. 12, no. 9, Sep 2020, Art no. 1451, doi: 10.3390/sym12091451.

[80] A. Calborean et al., "Laparoscopic compatible device incorporating inductive proximity sensors for precise detection of gastric and colorectal small tumors," Surgical Oncology-Oxford, vol. 35, pp. 504-514, Dec 2020, doi: 10.1016/j.suronc.2020.10.012.

[81] E. Campean, C. Gelmereanu, C. Abrudan, and L. Morar, "CONSIDERATIONS ON INCREASING THE PRODUCTIVITY OF MILLING PROCESS USING BRAIN SUPROGRAMS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 253-260, Sep 2020.

[82] G. Carbone, E. C. Gerding, B. Corves, D. Cafolla, M. Russo, and M. Ceccarelli, "Design of a Two-DOFs Driving Mechanism for a Motion-Assisted Finger Exoskeleton," Applied Sciences-Basel, vol. 10, no. 7, Apr 2020, Art no. 2619, doi: 10.3390/app10072619.

[83] G. Catargiu, E. H. Dulf, and L. C. Miclea, "Connected Bike-smart IoT-based Cycling Training Solution," Sensors, vol. 20, no. 5, Mar 2020, Art no. 1473, doi: 10.3390/s20051473.

[84] A. Catinean, L. Dascalescu, M. Lungu, L. M. Dumitran, and A. Samuila, "Improving the recovery of copper from electric cable waste derived from automotive industry by corona-electrostatic separation," Particulate Science and Technology, vol. 39, no. 4, pp. 449-456, May 2021, doi: 10.1080/02726351.2020.1756545.

[85] W. J. Chen, H. W. Song, L. Lazarescu, Y. Xu, S. H. Zhang, and D. Banabic, "Formability analysis of hot-rolled dual-phase steel during the multistage stamping process of wheel disc," International Journal of Advanced Manufacturing Technology, vol. 110, no. 5-6, pp. 1563-1573, Sep 2020, doi: 10.1007/s00170-020-05963-x.

[86] D. Chioran and H. Valean, "Arduino based Smart Home Automation System A Simple and Efficient Serial

Communication Method," International Journal of Advanced Computer Science and Applications, vol. 11, no. 4, pp. 67-73, Apr 2020.

[87] A. Chiorean et al., "Visualization of the shear wave on gray-scale ultrasound: experience with a complex breast cyst," Medical Ultrasonography, vol. 22, no. 4, pp. 492-494, 2020, doi: 10.11152/mu-2264.

[88] C. G. Chiorean, D. Passera, R. Ferrari, and E. Rizzi, "An implementation for 2nd-order M-N coupling and geometric stiffness adaptation in tapered beam-column elements," Engineering Structures, vol. 225, Dec 2020, Art no. 111241, doi: 10.1016/j.engstruct.2020.111241.

[89] R. S. Chiorean, M. C. Dudescu, C. G. Neamtu, P. Bere, and M. Fartan, "DESIGN CONSIDERATIONS FOR A MODERN TRAM BOGIE: FROM SHEET METAL TO MULTI-LAYER CARBON FIBER REINFORCED COMPOSITE MATERIAL," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 165-168, Jun 2020.

[90] M. Chirca et al., "Electronically Controlled Actuators for a Micro Wind Turbine Furling Mechanism," Energies, vol. 13, no. 16, Aug 2020, Art no. 4207, doi: 10.3390/en13164207.

[91] L. Ciascai and A. Mocan, "CALIBRATION PROCEDURE FOR PENDULUM POSITION MEASUREMENT," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 21-26, Mar 2020.

[92] D. S. Cimpean, M. A. Sheremet, and I. Pop, "Mixed convection of hybrid nanofluid in a porous trapezoidal chamber," International Communications in Heat and Mass Transfer, vol. 116, Jul 2020, Art no. 104627, doi: 10.1016/j.icheatmasstransfer.2020.104627.

[93] S. I. Cimpean et al., "Assessing Fracture Resistance of non Vital Teeth Using Two Different Composite Systems: Short-Fibre-Reinforced Composite and Glass Fibre Post with Microfilled Hybrid Composite," Materiale Plastice, vol. 57, no. 4, pp. 286-296, Dec 2020.

[94] T. Cioara et al., "Data Centers Optimized Integration with Multi-Energy Grids: Test Cases and Results in Operational Environment," Sustainability, vol. 12, no. 23, Dec 2020, Art no. 9893, doi: 10.3390/su12239893.

[95] A. Ciorita et al., "Green Synthesis of Ag-MnO2 Nanoparticles using Chelidonium majus and Vinca minor Extracts and Their In Vitro Cytotoxicity," Molecules, vol. 25, no. 4, Feb 2020, Art no. 819, doi: 10.3390/molecules25040819.

[96] S. A. Ciplea and N. Lungu, "Ulam stability of Volterra integral equation on a generalized metric space," Studia Universitatis Babes-Bolyai Mathematica, vol. 65, no. 2, pp. 303-308, 2020, doi: 10.24193/subbmath.2020.2.11.

[97] M. Ciupan, "DYNAMIC ANALYSIS AND COMPARISON OF DIFFERENT DESIGNS OF MILLING MACHINE BEDS MADE OF MINERAL CASTING," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 335-342, Sep 2020.

[98] A. Ciuparu, A. Nagy-Dabacan, and R. C. Muresan, "Soft plus plus , a multi-parametric non-saturating non-linearity that improves convergence in deep neural architectures," Neurocomputing, vol. 384, pp. 376-388, Apr 2020, doi: 10.1016/j.neucom.2019.12.014.

[99] T. Coconet, A. Marcus, and C. C. Todea, "BLOCK EXTENSIONS, LOCAL CATEGORIES AND BASIC MORITA EQUIVALENCES," Quarterly Journal of Mathematics, vol. 71, no. 2, pp. 703-728, Jun 2020, doi: 10.1093/qmathj/haaa008.

[100] T. Coconet and C. C. Todea, "Domination of blocks, fusion systems and hyperfocal subgroups," Journal of Algebra, vol. 549, pp. 30-44, May 2020, doi: 10.1016/j.jalgebra.2019.11.037.

[101] F. Codreanu, Into the dark side of Pop Art From Warhol to Banksy (Death in Contemporary Popular Culture). 2020, pp. 116-132.

[102] R. Comes et al., "ENHANCING ACCESSIBILITY TO CULTURAL HERITAGE THROUGH DIGITAL CONTENT AND VIRTUAL REALITY: A CASE STUDY OF THE SARMIZEGETUSA REGIA UNESCO SITE," Journal of Ancient History and Archaeology, vol. 7, no. 3, pp. 124-139, 2020, doi: 10.14795/j.v7i3.561.

[103] R. N. Corches, C. I. Inoan, and G. Achimas, "ASPECTS REGARDING THE MACHINABILITY OF STEEL PLATES BY COLD COMPRESSING," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 303-312, Sep 2020.

[104] R. Coroiu, D. C. David, O. Coroiu, and C. Ciupan, "Inventory and State-of-Conservation Survey Model for Railway Heritage: The Case of Turda-Abrud (Romania)," Industrial Archaeology Review, vol. 42, no. 2, pp. 114-125, Jul 2020, doi: 10.1080/03090728.2020.1798105.

[105] C. Cosma et al., "Physical-Mechanical Characteristics and Microstructure of Ti6Al7Nb Lattice Structures Manufactured by Selective Laser Melting," Materials, vol. 13, no. 18, Sep 2020, Art no. 4123, doi: 10.3390/ma13184123.

[106] C. Cosma, J. Kessler, A. Gebhardt, I. Campbell, and N. Balc, "Improving the Mechanical Strength of Dental Applications and Lattice Structures SLM Processed," Materials, vol. 13, no. 4, Feb 2020, Art no. 905, doi: 10.3390/ma13040905.

[107] O. Cosma, P. C. Pop, and D. Danciulescu, "A novel matheuristic approach for a two-stage transportation problem with fixed costs associated to the routes," Computers & Operations Research, vol. 118, Jun 2020, Art no. 104906,

doi: 10.1016/j.cor.2020.104906.

[108]O. Cosma, P. C. Pop, and D. Danciulescu, "A Parallel Algorithm for Solving a Two-Stage Fixed-Charge Transportation Problem," Informatica, vol. 31, no. 4, pp. 681-706, 2020, doi: 10.15388/20-infor432.

[109]O. Cosma, P. C. Pop, and C. Sabo, "An Efficient Hybrid Genetic Approach for Solving the Two-Stage Supply Chain Network Design Problem with Fixed Costs," Mathematics, vol. 8, no. 5, May 2020, Art no. 712, doi: 10.3390/math8050712.

[110]O. Cosma, P. C. Pop, and I. Zelina, "A novel genetic algorithm for solving the clustered shortest-path tree problem," Carpathian Journal of Mathematics, vol. 36, no. 3, pp. 401-414, 2020.

[111]L. I. Cotirla and A. Catas, "Differential sandwich theorem for certain class of analytic functions associated with an integral operator," Studia Universitatis Babes-Bolyai Mathematica, vol. 65, no. 4, pp. 487-494, 2020, doi: 10.24193/subbmath.2020.4.01.

[112]F. Covaciu, "DESIGNING AND MANUFACTURING A DELTA ROBOT FOR PICK AND PLACE APPLICATIONS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 67-72, Mar 2020.

[113]F. Covaciu and A. E. Iordan, "DESIGNING A COOLING SYSTEM FOR AN ELECTRIC MOTOR THAT IS USED IN THE AUTOMOTIVE INDUSTRY," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 61-66, Mar 2020.

[114]A. M. Cozmuta et al., "Impact of packaging properties on the physical-chemical-microbiological-sensory characteristics of Ricotta cheese during storage," Packaging Technology and Science, vol. 33, no. 1, pp. 27-37, Jan 2020, doi: 10.1002/pts.2482.

[115]E. M. Craciun, A. Rabaea, and S. Das, "Cracks Interaction in a Pre-Stressed and Pre-Polarized Piezoelectric Material," Journal of Mechanics, vol. 36, no. 2, pp. 177-182, Apr 2020, Art no. Pii s1727719119000571, doi: 10.1017/jmech.2019.57.

[116]I. Craciun, D. Popa, F. Serdean, and L. Tudose, "On Approximate Aesthetic Curves," Symmetry-Basel, vol. 12, no. 9, Sep 2020, Art no. 1394, doi: 10.3390/sym12091394.

[117]A. Cretu, C. Mattea, S. Stapf, and I. Ardelean, "The Effect of Silica Fume and Organosilane Addition on the Porosity of Cement Paste," Molecules, vol. 25, no. 8, Apr 2020, Art no. 1762, doi: 10.3390/molecules25081762.

[118]M. Cretu et al., "Modelling and evaluation of the Baseline Energy Consumption and the Key Performance Indicators in Technical University of Cluj-Napoca buildings within a Demand Response programme: a case study," Iet Renewable Power Generation, vol. 14, no. 15, pp. 2864-2875, Nov 2020, doi: 10.1049/iet-rpg.2020.0096.

[119]A. V. Crisan and I. V. Vancea, "Finsler geometries from topological electromagnetism," European Physical Journal C, vol. 80, no. 6, Jun 2020, Art no. 566, doi: 10.1140/epjc/s10052-020-8123-3.

[120]A. V. Crisan and I. V. Vancea, "Nonlinear dynamics of a charged particle in a strong non-null knot wave background," International Journal of Modern Physics A, vol. 35, no. 21, Jul 2020, Art no. 2050113, doi: 10.1142/s0217751x20501134.

[121]G. C. Crisan, C. M. Pintea, P. C. Pop, and O. Matei, "Economical connections between several European countries based on TSP data," Logic Journal of the Igpl, vol. 28, no. 1, pp. 33-44, Feb 2020, doi: 10.1093/jigpal/jzz069.

[122]O. A. Crisan et al., "QUALITATIVE ANALYSIS OF FILTERS FOR THE MECHANICAL NANOFILTRATION OF HOUSEHOLD DRINKING WATER," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 1, pp. 253-266, 2020, doi: 10.24193/subbchem.2020.1.20.

[123]A. F. Cristea and M. Ghisa, "CONTRIBUTIONS REGARDING THE MODELING, DESIGN AND COST OF A VIBRATION DAMPING DEVICE IN THE HAND-ARM SYSTEM," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 159-164, Jun 2020.

[124]C. Cristea, M. Cristea, I. Birou, and R. A. Tirnovan, "Economic assessment of grid-connected residential solar photovoltaic systems introduced under Romania's new regulation," Renewable Energy, vol. 162, pp. 13-29, Dec 2020, doi: 10.1016/j.renene.2020.07.130.

[125]M. Curovic et al., "Structural and ecological characteristics of mixed broadleaved old-growth forest (Biogradska Gora - Montenegro)," Turkish Journal of Agriculture and Forestry, vol. 44, no. 4, pp. 428-438, 2020, doi: 10.3906/tar-2003-103.

[126]R. Curta, B. Moldovan, and M. Steopan, "AUTOMATING THE FEEDING OF A COORDINATE MEASURING MACHINE," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 91-94, Mar 2020.

[127]G. E. Damian, V. Micle, and I. M. Sur, "REMOVAL OF HEAVY METALS FROM CONTAMINATED SOIL USING CHITOSAN AS WASHING AGENT A - PRELIMINARY STUDY," Journal of Environmental Protection and Ecology, vol. 21, no. 3, pp. 823-829, 2020.

[128]G. Damian et al., "Valentinite and Colloform Sphalerite in Epithermal Deposits from Baia Mare Area, Eastern Carpathians," Minerals, vol. 10, no. 2, Feb 2020, Art no. 121, doi: 10.3390/min10020121.

[129]C. Darab et al., "Hybrid Load Forecasting Using Gaussian Process Regression and Novel Residual Prediction," Applied Sciences-Basel, vol. 10, no. 13, Jul 2020, Art no. 4588, doi: 10.3390/app10134588.

[130]L. M. Dascalu et al., "Assessment and Characterization of Some New Photosensitizers for Antimicrobial Photodynamic Therapy (aPDT)," Materials, vol. 13, no. 13, Jul 2020, Art no. 3012, doi: 10.3390/ma13133012.

[131]A. Dehelean, S. Rada, M. Zagrai, R. Suciu, and C. Molnar, "Concentration Dependent Spectroscopic Properties of Terbium Ion Doped Lead-Borate Glasses and Vitroceramics," Analytical Letters, vol. 54, no. 1-2, pp. 88-97, Jan 2021, doi: 10.1080/00032719.2020.1723614.

[132]H. S. Dhiman, D. Deb, J. Carroll, V. Muresan, and M. L. Unguresan, "Wind Turbine Gearbox Condition Monitoring Based on Class of Support Vector Regression Models and Residual Analysis," Sensors, vol. 20, no. 23, Dec 2020, Art no. 6742, doi: 10.3390/s20236742.

[133]R. A. C. Diaz, M. Ghita, D. Copot, I. R. Birs, C. Muresan, and C. Ionescu, "Context Aware Control Systems: An Engineering Applications Perspective," Ieee Access, vol. 8, pp. 215550-215569, 2020, doi: 10.1109/access.2020.3041357.

[134]T. Dippong, O. Cadar, I. G. Deac, M. Lazar, G. Borodi, and E. A. Levei, "Influence of ferrite to silica ratio and thermal treatment on porosity, surface, microstructure and magnetic properties of Zn0.5Ni0.5Fe2O4/SiO2 nanocomposites," Journal of Alloys and Compounds, vol. 828, Jul 2020, Art no. 154409, doi: 10.1016/j.jallcom.2020.154409.

[135]T. Dippong, O. Cadar, E. A. Levei, and I. G. Deac, "Microstructure, porosity and magnetic properties of Zn0.5Co0.5Fe2O4/SiO2 nanocomposites prepared by sol-gel method using different polyols," Journal of Magnetism and Magnetic Materials, vol. 498, Mar 2020, Art no. 166168, doi: 10.1016/j.jmmm.2019.166168.

[136]T. Dippong, I. G. Deac, O. Cadar, E. A. Levei, and I. Petean, "Impact of Cu2+ substitution by Co2+ on the structural and magnetic properties of CuFe2O4 synthesized by sol-gel route," Materials Characterization, vol. 163, May 2020, Art no. 110248, doi: 10.1016/j.matchar.2020.110248.

[137]T. Dippong, M. A. Hoaghia, C. Mihali, E. Cical, and M. Calugaru, "Human health risk assessment of some bottled waters from Romania," Environmental Pollution, vol. 267, Dec 2020, Art no. 115409, doi: 10.1016/j.envpol.2020.115409.

[138]T. Dippong et al., "Effect of amorphous SiO2 matrix on structural and magnetic properties of Cu0.6Co0.4Fe2O4/SiO2 nanocomposites," Journal of Alloys and Compounds, vol. 849, Dec 2020, Art no. 156695, doi: 10.1016/j.jallcom.2020.156695.

[139]T. Dippong, E. A. Levei, I. G. Deac, E. Neag, and O. Cadar, "Influence of Cu2+, Ni2+, and Zn2+ Ions Doping on the Structure, Morphology, and Magnetic Properties of Co-Ferrite Embedded in SiO2 Matrix Obtained by an Innovative Sol-Gel Route," Nanomaterials, vol. 10, no. 3, Mar 2020, Art no. 580, doi: 10.3390/nano10030580.

[140]T. Dippong, E. A. Levei, C. L. Lengauer, A. Daniel, D. Toloman, and O. Cadar, "Investigation of thermal, structural, morphological and photocatalytic properties of CuxCo1-xFe2O4 (0 <= x <= 1) nanoparticles embedded in SiO2 matrix," Materials Characterization, vol. 163, May 2020, Art no. 110268, doi: 10.1016/j.matchar.2020.110268.

[141]I. Domuta and T. P. Palade, "On-Line Estimation of Base Station Location," Ieee Wireless Communications Letters, vol. 9, no. 3, pp. 331-335, Mar 2020, doi: 10.1109/lwc.2019.2953848.

[142]I. Domuta, T. P. Palade, E. Puschita, and A. Pastrav, "Timestamp Estimation in P802.15.4z Amendment," Sensors, vol. 20, no. 18, Sep 2020, Art no. 5422, doi: 10.3390/s20185422.

[143]D. Dragomir and S. Bodi, "INCREASING DESIGN PROCESS ROBUSTNESS IN THE CASE OF DURABLE CONSUMER GOODS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 169-174, Jun 2020.

[144]T. L. Dragomir, O. Stefan, S. Nanu, and A. Codrean, "Discrete-Time Rule-based Time Optimal Controller," Control Engineering and Applied Informatics, vol. 22, no. 2, pp. 67-78, 2020.

[145]M. Drazic et al., "The Influence of the Application Technique and Amount of Liquid Starter Fertilizer on Corn Yield," Agriculture-Basel, vol. 10, no. 8, Aug 2020, Art no. 347, doi: 10.3390/agriculture10080347.

[146]E. H. Dulf and C. Festila, "Sensors for Cryogenic Isotope-Separation Column," Sensors, vol. 20, no. 14, Jul 2020, Art no. 3890, doi: 10.3390/s20143890.

[147]E. H. Dulf, M. Saila, C. I. Muresan, and L. C. Miclea, "An Efficient Design and Implementation of a Quadrotor Unmanned Aerial Vehicle Using Quaternion-Based Estimator," Mathematics, vol. 8, no. 10, Oct 2020, Art no. 1829, doi: 10.3390/math8101829.

[148]E. H. Dulf, D. C. Vodnar, A. Danku, C. I. Muresan, and O. Crisan, "Fractional-Order Models for Biochemical Processes," Fractal and Fractional, vol. 4, no. 2, Jun 2020, Art no. 12, doi: 10.3390/fractalfract4020012.

[149]F. V. Dulf, D. C. Vodnar, M. I. Tosa, and E. H. Dulf, "Simultaneous enrichment of grape pomace with gamma-linolenic acid and carotenoids by solid-state fermentation with Zygomycetes fungi and antioxidant potential of the bioprocessed substrates," Food Chemistry, vol. 310, Apr 2020, Art no. 125927, doi: 10.1016/j.foodchem.2019.125927.

[150]A. Dumuta, C. Mihali, Z. Berinde, Z. Vosgan, L. Mihalescu, and A. Noghi, "Milk Cholesterol Reduction at Pilot

Station Level Using Beta-Cyclodextrin," Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca-Food Science and Technology, vol. 77, no. 2, pp. 82-87, 2020, doi: 10.15835/buasvmcn-fst:2020.0005.

[151]K. Enisz, G. Kohlrusz, D. Fodor, L. Kovacs, and R. Marschalko, "DEGRADATION ANALYSIS OF DC-LINK ALUMINIUM ELECTROLYTIC CAPACITORS OPERATING IN PWM POWER CONVERTERS," Advances in Electrical and Electronic Engineering, vol. 18, no. 2, pp. 85-91, Jun 2020, doi: 10.15598/aeee.v18i2.3387.

[152]M. Fattahi et al., "Topographic characterization of zirconia-based ceramics by atomic force microscopy: A case study on different laser irradiations," Journal of Alloys and Compounds, vol. 831, Aug 2020.

[153]D. Felecan and O. Felecan, "Implicit Content in Jokes Generated by the Covid-19 Pandemic: Theoretical Landmarks (I)," Philologica Jassyensia, vol. 16, no. 2, pp. 265-271, 2020.

[154]O. Felecan, "ROMANIAN OIKONYMS AND HODONYMS MIRRORING THE GREAT UNION OF 1918," Mitteilungen Der Osterreichischen Geographischen Gesellschaft, vol. 162, pp. 495-517, 2020, doi: 10.1553/moegg162s495.

[155]M. Fetea and A. Abrudan, "MECHANICAL STUDY REGARDING THE LIMITS OF USE OF POLYPROPYLENE PIPES," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 381-388, Nov 2020.

[156]C. Filote, R. A. Felseghi, M. S. Raboaca, and I. Aschilean, "Environmental impact assessment of green energy systems for power supply of electric vehicle charging station," International Journal of Energy Research, vol. 44, no. 13, pp. 10471-10494, Oct 2020, doi: 10.1002/er.5678.

[157]T. Fischer, D. E. Demco, R. Fechete, M. Moller, and S. Singh, "Poly(vinylamine-co-N-isopropylacrylamide) linear polymer and hydrogels with tuned thermoresponsivity," Soft Matter, vol. 16, no. 28, pp. 6549-6562, Jul 2020, doi: 10.1039/d0sm00408a.

[158]C. Fleseriu, S. A. Cosma, and V. Bocanet, "Values and Planned Behaviour of the Romanian Organic Food Consumer," Sustainability, vol. 12, no. 5, Mar 2020, Art no. 1722, doi: 10.3390/su12051722.

[159]S. C. Folea and G. D. Mois, "Lessons Learned From the Development of Wireless Environmental Sensors," Ieee Transactions on Instrumentation and Measurement, vol. 69, no. 6, pp. 3470-3480, Jun 2020, doi: 10.1109/tim.2019.2938137.

[160]M. S. Gabor, T. Petrisor, M. Nasui, M. A. Nsibi, J. Nath, and I. M. Miron, "Spin-orbit Torques and Magnetization Switching in Perpendicularly Magnetized Epitaxial Pd/Co2FeAl/MgO Structures," Physical Review Applied, vol. 13, no. 5, May 2020, Art no. 054039, doi: 10.1103/PhysRevApplied.13.054039.

[161]T. Gale, T. Solc, R. A. Mosoi, M. Mohorcic, and C. Fortuna, "Automatic Detection of Wireless Transmissions," Ieee Access, vol. 8, pp. 24370-24384, 2020, doi: 10.1109/access.2020.2970840.

[162]F. Gallego-Gomez, C. Cadar, C. Lopez, and I. Ardelean, "Imbibition and dewetting of silica colloidal crystals: An NMR relaxometry study," Journal of Colloid and Interface Science, vol. 561, pp. 741-748, Mar 2020, doi: 10.1016/j.jcis.2019.11.050.

[163]B. Gavrea, "ON A CONVEXITY PROBLEM WITH APPLICATIONS TO MASTROIANNI TYPE OPERATORS," Mathematical Inequalities & Applications, vol. 23, no. 2, pp. 765-773, Apr 2020, doi: 10.7153/mia-2020-23-64.

[164]B. Gavrea, "Some Inequalities for the Coefficients in Generalized Fourier Expansions," Mediterranean Journal of Mathematics, vol. 17, no. 4, Aug 2020, Art no. 134, doi: 10.1007/s00009-020-01578-4.

[165]D. M. Gherasim and M. Arghir, "DOCUMENTARY STUDY ON THE MUSCULAR SYSTEM OF THE HUMAN BODY REQUIRED TO MECHANICALLY VIBRATIONS INDUCED FOR REFACEMENT OF THE ORGAN IN SUFFERING USING ENERGY ANALYSIS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 313-320, Sep 2020.

[166]T. Gherman, D. Petreus, and M. N. Cirstea, "A Real Time Simulator of a Phase Shifted Converter for High Frequency Applications," Advances in Electrical and Computer Engineering, vol. 20, no. 3, pp. 11-22, Aug 2020, doi: 10.4316/aece.2020.03002.

[167]M. Ghita, M. Neckebroek, J. Juchem, D. Copot, C. I. Muresan, and C. M. Ionescu, "Bioimpedance Sensor and Methodology for Acute Pain Monitoring," Sensors, vol. 20, no. 23, Dec 2020, Art no. 6765, doi: 10.3390/s20236765.

[168]M. Ghita, M. Neckebroek, C. Muresan, and D. Copot, "Closed-Loop Control of Anesthesia: Survey on Actual Trends, Challenges and Perspectives," Ieee Access, vol. 8, pp. 206264-206279, 2020, doi: 10.1109/access.2020.3037725.

[169]F. Ghribi, L. E. Mabrouk, K. Djessas, and S. Talu, "Effect of substrate type on RF magnetron sputtered CuInS2 thin films properties based on nanoparticles synthesized by solvothermal route," Applied Physics a-Materials Science & Processing, vol. 126, no. 10, Sep 2020, Art no. 805, doi: 10.1007/s00339-020-03993-6.

[170]G. I. Giurgi et al., "INVERTED VERSUS DIRECT STRUCTURE BULK HETEROJUNCTION ORGANIC SOLAR CELLS INVOLVING A TRIPHENYLAMINE-BASED SMALL MOLECULAR DONOR," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 2, pp. 95-106, 2020, doi: 10.24193/subbchem.2020.2.08.

[171]C. Gonzalez-Ruano et al., "Superconductivity-induced change in magnetic anisotropy in epitaxial ferromagnet-superconductor hybrids with spin-orbit interaction," Physical Review B, vol. 102, no. 2, Jul 2020, Art no. 020405, doi: 10.1103/PhysRevB.102.020405.

[172]A. Grobelna, S. Kalisz, M. Kieliszek, and L. Giurgiulescu, "BLUE HONEYSUCKLE BERRY (LONICERA CAERULEA L.), AS RAW MATERIAL, IS PARTICULARLY PREDISPOSED TO THE PRODUCTION OF FUNCTIONAL FOODS," Carpathian Journal of Food Science and Technology, vol. 12, no. 3, pp. 144-155, 2020, doi: 10.34302/crpjfst/2020.12.3.12.

[173]A. Groza, P. Ozturk, R. R. Slavescu, and A. Marginean, "Climate Change Opinions in Online Debate Sites," Computer Science and Information Systems, vol. 17, no. 1, pp. 93-115, Jan 2020, doi: 10.2298/csis180601015g.

[174]S. Haragas and O. Buiga, "PRACTICAL ASPECTS CONCERNING THE DEMOLDING MOMENT CALCULATION FOR INJECTED PARTS WITH EXTERNAL THREAD," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 123-128, Jun 2020.

[175]M. Heilmann, F. Nasaireh, and I. Rasa, "Discrete operators associated with linking operators," Analysis and Mathematical Physics, vol. 10, no. 4, Nov 2020, Art no. 72, doi: 10.1007/s13324-020-00423-x.

[176]R. Hirian, B. V. Neamtu, A. Ferenczi, O. Isnard, I. Chicinas, and V. Pop, "EFFECT OF SPARK PLASMA SINTERING ON THE INTERPHASE EXCHANGE COUPLING IN SmCo5+20%Fe HARD/SOFT NANOCOMPOSITES," Romanian Journal of Physics, vol. 65, no. 3-4, 2020, Art no. 603.

[177]N. B. Hoch and S. Brad, "Managing business model innovation: an innovative approach towards designing a digital ecosystem and multi-sided platform," Business Process Management Journal, vol. 27, no. 2, pp. 415-438, Mar 2021, doi: 10.1108/bpmj-01-2020-0017.

[178]A. Holhos, "King-type operators related to squared Szasz-Mirakyan basis," Studia Universitatis Babes-Bolyai Mathematica, vol. 65, no. 2, pp. 279-290, 2020, doi: 10.24193/subbmath.2020.2.09.

[179]A. Holhos and D. Rosca, "Orhonormal Wavelet Bases on The 3D Ball Via Volume Preserving Map from the Regular Octahedron," Mathematics, vol. 8, no. 6, Jun 2020, Art no. 994, doi: 10.3390/math8060994.

[180]A. Hotupan and A. Hadarean, "EXPERIMENTAL DETERMINATION OF THE DISCHARGE COEFFCIENT THROUGH CIRCULAR ORIFICE IN PVC PIPES," Journal of Applied Engineering Sciences, vol. 10, no. 2, pp. 133-138, 2020, doi: 10.2478/jaes-2020-0020.

[181]R. Hristu, L. G. Eftimie, B. Paun, S. G. Stanciu, and G. A. Stanciu, "Pixel-level angular quantification of capsular collagen in second harmonic generation microscopy images of encapsulated thyroid nodules," Journal of Biophotonics, vol. 13, no. 12, Dec 2020, Art no. e202000262, doi: 10.1002/jbio.202000262.

[182]P. P. Hu, N. Nourbakhsh, J. Tian, S. Sturges, V. Dadarlat, and A. Munteanu, "A generic method of wearable items virtual try-on," Textile Research Journal, vol. 90, no. 19-20, pp. 2161-2174, Oct 2020, Art no. 0040517520909995, doi: 10.1177/0040517520909995.

[183]I. Iancu and B. Iancu, "Designing mobile technology for elderly. A theoretical overview," Technological Forecasting and Social Change, vol. 155, Jun 2020, Art no. 119977, doi: 10.1016/j.techfore.2020.119977.

[184]D. Ianosi and A. A. Opris, "On some inequalities relative to the Pompeiu-Chebyshev functional," Journal of Inequalities and Applications, vol. 2020, no. 1, Feb 2020, Art no. 46, doi: 10.1186/s13660-020-02312-0.

[185]V. Ilea, A. Novac, D. Otrocol, and R. Precup, "Solutions with a prescribed interval of positivity for differential systems with nonlocal conditions," Applied Mathematics and Computation, vol. 375, Jan 2020, Art no. 125092, doi: 10.1016/j.amc.2020.125092.

[186]V. Ilea and D. Otrocol, "Existence and Uniqueness of the Solution for an Integral Equation with Supremum, via w-Distances," Symmetry-Basel, vol. 12, no. 9, Sep 2020, Art no. 1554, doi: 10.3390/sym12091554.

[187]V. Ilea and D. Otrocol, "ON THE BURTON METHOD OF PROGRESSIVE CONTRACTIONS FOR VOLTERRA INTEGRAL EQUATIONS," Fixed Point Theory, vol. 21, no. 2, pp. 585-594, 2020, doi: 10.24193/fpt-ro.2020.2.41.

[188]C. I. Inoan, R. N. Corches, and G. Achimas, "POSSIBILITIES TO INCREASE THE DURABILITY OF THE ACTIVE PLATES OF THE EXTRUSION DIES," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 321-330, Sep 2020.

[189]C. M. Ionescu, I. R. Birs, D. Copot, C. I. Muresan, and R. Caponetto, "Mathematical modelling with experimental validation of viscoelastic properties in non-Newtonian fluids," Philosophical Transactions of the Royal Society a-Mathematical Physical and Engineering Sciences, vol. 378, no. 2172, May 2020, Art no. 20190284, doi: 10.1098/rsta.2019.0284.

[190]C. M. Ionescu, E. H. Dulf, M. Ghita, and C. I. Muresan, "Robust controller design: Recent emerging concepts for control of mechatronic systems," Journal of the Franklin Institute-Engineering and Applied Mathematics, vol. 357, no. 12, pp. 7818-7844, Aug 2020, doi: 10.1016/j.jfranklin.2020.05.046.

[191]C. M. Ionescu, M. Ghita, D. Copot, E. Derom, and D. Verellen, "A Minimal PKPD Interaction Model for Evaluating Synergy Effects of Combined NSCLC Therapies," Journal of Clinical Medicine, vol. 9, no. 6, Jun 2020, Art no. 1832, doi: 10.3390/jcm9061832.

[192]D. Ionita and M. Arghir, "CONTRIBUTIONS TO THE APPROXIMATION WITH POLYNOMIAL FUNCTIONS OF

MATERIAL SYSTEMS VIBRATIONS. PART I: THEORETICAL CONSIDERATIONS ON THE REAL MECHANICAL SYSTEM," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 213-218, Jun 2020.

[193]D. Ionita and M. Arghir, "CONTRIBUTIONS TO THE APPROXIMATION WITH POLYNOMIAL FUNCTIONS OF MATERIAL SYSTEMS VIBRATIONS. PART II: APPROXIMATION OF REAL VIBRATION ACCELERATIONS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 219-226, Jun 2020.

[194]D. Ionita, M. Cristea, and C. Gaina, "Prediction of polyurethane behaviour via time-temperature superposition: Meanings and limitations," Polymer Testing, vol. 83, Mar 2020, Art no. 106340, doi: 10.1016/j.polymertesting.2020.106340.

[195]A. E. Iordan and F. Covaciu, "IMPROVING DESIGN OF A TRIANGLE GEOMETRY COMPUTER APPLICATION USING A CREATIONAL PATTERN," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 73-78, Mar 2020.

[196]R. Istoan, D. R. Tamas-Gavrea, and D. L. Manea, "Experimental Investigations on the Performances of Composite Building Materials Based on Industrial Crops and Volcanic Rocks," Crystals, vol. 10, no. 2, Feb 2020, Art no. 102, doi: 10.3390/cryst10020102.

[197]R. Itu and R. G. Danescu, "A Self-Calibrating Probabilistic Framework for 3D Environment Perception Using Monocular Vision," Sensors, vol. 20, no. 5, Mar 2020, Art no. 1280, doi: 10.3390/s20051280.

[198]L. Ivan, D. Beu, and J. van Hoof, "Smart and Age-Friendly Cities in Romania: An Overview of Public Policy and Practice," International Journal of Environmental Research and Public Health, vol. 17, no. 14, Jul 2020, Art no. 5202, doi: 10.3390/ijerph17145202.

[199]E. Izak-Nau, D. E. Demco, S. Braun, C. Baumann, A. Pich, and R. Gostl, "Shear-Induced Structural and Functional Transformations of Poly(N-vinylcaprolactam) Microgels," Acs Applied Polymer Materials, vol. 2, no. 4, pp. 1682-1691, Apr 2020, doi: 10.1021/acsapm.0c00111.

[200]A. Jafari et al., "Ion implantation of copper oxide thin films; statistical and experimental results," Surfaces and Interfaces, vol. 18, Mar 2020, Art no. 100463, doi: 10.1016/j.surfin.2020.100463.

[201]A. R. Jahangiri, P. R. Kalvani, S. Shapouri, A. Sari, S. Talu, and Y. S. Jalili, "Quantitative SEM characterisation of ceramic targetpriorandaftermagnetron sputtering: a case study of aluminium zinc oxide," Journal of Microscopy, vol. 281, no. 3, pp. 190-201, Mar 2021, doi: 10.1111/jmi.12961.

[202]P. Jailoka, V. Berinde, and S. Suantai, "Strong convergence of Picard and Mann iterations for strongly demicontractive multi-valued mappings," Carpathian Journal of Mathematics, vol. 36, no. 2, pp. 268-275, 2020.

[203]T. Jana, M. Kaushik, D. Deb, V. Muresan, and M. Unguresan, "Aerodynamic Studies on Non-Premixed Oxy-Methane Flames and Separated Oxy-Methane Cold Jets," Processes, vol. 8, no. 4, Apr 2020, Art no. 429, doi: 10.3390/pr8040429.

[204]L. Jantschi, "Detecting Extreme Values with Order Statistics in Samples from Continuous Distributions," Mathematics, vol. 8, no. 2, Feb 2020, Art no. 216, doi: 10.3390/math8020216.

[205]W. H. Jiang, W. L. Xie, H. W. Song, L. Lazarescu, S. H. Zhang, and D. Banabic, "A modified thin-walled tube push-bending process with polyurethane mandrel," International Journal of Advanced Manufacturing Technology, vol. 106, no. 5-6, pp. 2509-2521, Jan 2020, doi: 10.1007/s00170-019-04827-3.

[206]P. A. Jiman et al., "SURFACE CHARACTERIZATION AND CYTOTOXICITY ANALYSIS OF THE TITANIUM ALLOYS FOR DENTISTRY," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 1, pp. 149-162, 2020, doi: 10.24193/subbchem.2020.1.12.

[207]M. Joldea and I. Lupea, "PARAMETERS AFFECTING THE OUTDOOR NOISE BARRIERS EFFECTIVENESS - SIMULATION WITH SOUNDPLAN," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 1, pp. 107-112, Mar 2020.

[208]F. N. Jurca, R. Inte, and C. Martis, "Optimal rotor design of novel outer rotor reluctance synchronous machine," Electrical Engineering, vol. 102, no. 1, pp. 107-116, Mar 2020, doi: 10.1007/s00202-019-00786-w.

[209]E. C. Jurco, G. Onaciu, S. Suciu, A. N. Jurco, A. C. Mot, and S. G. Jurco, "Preweaning growth performances of Aberdeen Angus calves," Romanian Biotechnological Letters, vol. 25, no. 5, pp. 1969-1976, Sep-Oct 2020, doi: 10.25083/rbl/25.5/1969.1976.

[210]A. Kajla and D. Miclaus, "Bezier Variant of the Szasz-Durrmeyer Type Operators Based on the Poisson-Charlier Polynomials," Filomat, vol. 34, no. 10, pp. 3265-3273, 2020, doi: 10.2298/fil2010265k.

[211]P. Kapalo, F. Domnita, O. Pop, M. Adamski, and O. Voznyak, "CONSIDERATIONS ABOUT THE REQUIRED VOLUMETRIC AIR FLOW RATE INSIDE AN OFFICE ROOM WITH ONE OCCUPANT - CASE STUDY," Journal of Applied Engineering Sciences, vol. 10, no. 1, pp. 31-38, 2020, Art no. 281, doi: 10.2478/jaes-2020-0006.

[212]P. Kapalo, S. Vilcekova, L. Meciarova, F. Domnita, and M. Adamski, "Influence of Indoor Climate on Employees in Office Buildings-A Case Study," Sustainability, vol. 12, no. 14, Jul 2020, Art no. 5569, doi: 10.3390/su12145569.

[213]L. Karoly, O. Stan, and L. Miclea, "Seismic Model Parameter Optimization for Building Structures," Sensors, vol.

20, no. 7, Apr 2020, Art no. 1980, doi: 10.3390/s20071980.

[214] A. Korodi, R. Crisan, A. Nicolae, and I. Silea, "Industrial Internet of Things and Fog Computing to Reduce Energy Consumption in Drinking Water Facilities," Processes, vol. 8, no. 3, Mar 2020, Art no. 282, doi: 10.3390/pr8030282.

[215] D. Kumar, J. R. Sharma, and L. Jantschi, "A Novel Family of Efficient Weighted-Newton Multiple Root Iterations," Symmetry-Basel, vol. 12, no. 9, Sep 2020, Art no. 1494, doi: 10.3390/sym12091494.

[216] S. Kumar, D. Kumar, J. R. Sharma, and L. Jantschi, "A Family of Derivative Free Optimal Fourth Order Methods for Computing Multiple Roots," Symmetry-Basel, vol. 12, no. 12, Dec 2020, Art no. 1969, doi: 10.3390/sym12121969.

[217] V. Kushwah et al., "Evolution of the microstructure and the drug release upon annealing the drug loaded lipid - surfactant microspheres," European Journal of Pharmaceutical Sciences, vol. 147, Apr 2020.

[218] C. Lapusan, O. Hancu, and C. Rad, "QUATERNION-BASED APPROACH FOR SOLVING THE DIRECT KINEMATICS OF A MODULAR HYPER REDUNDANT ROBOT," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 363-366, Nov 2020.

[219] C. Larosa, S. Talu, A. P. Reverberi, and M. Salerno, "Microporous morphology of cathodic electrolytic treated aluminum imaged by atomic force microscopy," Materials Letters, vol. 280, Dec 2020, Art no. 128593, doi: 10.1016/j.matlet.2020.128593.

[220] S. C. Laszlo, "Convergence rates for an inertial algorithm of gradient type associated to a smooth non-convex minimization," Mathematical Programming, vol. 190, no. 1-2, pp. 285-329, Nov 2021, doi: 10.1007/s10107-020-01534-w.

[221] G. Lazar, "LOVING THE PERFECT OTHER," Studia Universitatis Babes-Bolyai Philosophia, vol. 65, no. 1, pp. 85-94, Jan-Apr 2020, doi: 10.24193/subbphil.2020.1.07.

[222] G. D. Leutcho et al., "Multistability Control of Space Magnetization in Hyperjerk Oscillator: A Case Study," Journal of Computational and Nonlinear Dynamics, vol. 15, no. 5, May 2020, doi: 10.1115/1.4046639.

[223] T. Lotti et al., "Clinical updating study at 3 years on 278 patients treated by modern artificial hair implant technique (automatic biofibre (R))," Dermatologic Therapy, vol. 33, no. 1, Jan-Feb 2020, Art no. e13194, doi: 10.1111/dth.13194.

[224] I. Lupea, "SOUND ABSORPTION OF CORRUGATED CARDBOARD SAMPLES WITH A SIMPLE IMPEDANCE TUBE," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 347-352, Nov 2020.

[225] Z. Z. Major et al., "The Impact of Robotic Rehabilitation on the Motor System in Neurological Diseases. A Multimodal Neurophysiological Approach," International Journal of Environmental Research and Public Health, vol. 17, no. 18, Sep 2020, Art no. 6557, doi: 10.3390/ijerph17186557.

[226] M. Margaritescu, D. Dumitriu, C. Brisan, A. M. E. Rolea, and A. Constantin, "Complex and Robust Motion Performed in Extended Workspace with a Double Hexapod Robotic System," Mechanika, vol. 26, no. 6, pp. 532-539, 2020, doi: 10.5755/j01.mech.26.6.20949.

[227] D. Marian, S. A. Ciplea, and N. Lungu, "ON THE ULAM-HYERS STABILITY OF BIHARMONIC EQUATION," University Politehnica of Bucharest Scientific Bulletin-Series a-Applied Mathematics and Physics, vol. 82, no. 2, pp. 141-148, 2020.

[228] D. Marian, S. A. Ciplea, and N. Lungu, "On Ulam-Hyers Stability for a System of Partial Differential Equations of First Order," Symmetry-Basel, vol. 12, no. 7, Jul 2020, Art no. 1060, doi: 10.3390/sym12071060.

[229] D. Marian, S. A. Ciplea, and N. Lungu, "Optimal and Nonoptimal Gronwall Lemmas," Symmetry-Basel, vol. 12, no. 10, Oct 2020, Art no. 1728, doi: 10.3390/sym12101728.

[230] I. Martinez et al., "Interfacial Spin-Orbit Coupling: A Platform for Superconducting Spintronics," Physical Review Applied, vol. 13, no. 1, Jan 2020, Art no. 014030, doi: 10.1103/PhysRevApplied.13.014030.

[231] K. Marton, L. Lazar, A. Colesa, and A. Suciu, "COSTS AND BENEFITS OF ADAPTIVE TESTING IN ASSESSMENT OF RANDOM NUMBER SEQUENCES," Proceedings of the Romanian Academy Series a-Mathematics Physics Technical Sciences Information Science, vol. 21, no. 1, pp. 37-44, Jan-Mar 2020.

[232] I. Matei et al., "Land Use Favourability Assessment Based on Soil Characteristics and Anthropic Pollution. Case Study Somesul Mic Valley Corridor, Romania," Agronomy-Basel, vol. 10, no. 9, Sep 2020, Art no. 1245, doi: 10.3390/agronomy10091245.

[233] R. S. Matos, G. Q. Ramos, H. D. da Fonseca, and S. Talu, "Advanced micromorphology study of microbial films grown on Kefir loaded with Acai extract," Micron, vol. 137, Oct 2020, Art no. 102912, doi: 10.1016/j.micron.2020.102912.

[234] A. Maxim, S. Strajeru, C. Albu, M. Sandor, L. Mihalescu, and S. E. Pauliuc, "Conservation of vegetable genetic diversity in Transylvania-Romania," Scientific Reports, vol. 10, no. 1, Oct 2020, Art no. 18416, doi: 10.1038/s41598-020-75413-x.

[235] M. Mera, "STUDY CONCERNING THE CUTTING PROCESS USING A WORM-HOB WITH INCREASED

MESHING ANGLE," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 249-252, Sep 2020.

[236]V. V. Merie, N. V. Burnete, C. Birleanu, and M. Pustan, "Nanocharacterization of metallic thin films deposited on different substrates," Materials Science-Poland, vol. 38, no. 1, pp. 8-16, Mar 2020, doi: 10.2478/msp-2019-0095.

[237]A. D. Mezei, L. Tamas, and L. Busoniu, "Sorting Objects from a Conveyor Belt Using POMDPs with Multiple-Object Observations and Information-Gain Rewards," Sensors, vol. 20, no. 9, May 2020, Art no. 2481, doi: 10.3390/s20092481.

[238]V. C. Miclea and S. Nedevschi, "Real-Time Semantic Segmentation-Based Stereo Reconstruction," Ieee Transactions on Intelligent Transportation Systems, vol. 21, no. 4, pp. 1514-1524, Apr 2020, doi: 10.1109/tits.2019.2913883.

[239]L. Mihaila et al., "Perspectives in the Recycling of High Sulphatized Electrodes from Lead Acid Batteries," Analytical Letters, vol. 54, no. 9, pp. 1414-1422, Jun 2021, doi: 10.1080/00032719.2020.1803349.

[240]P. Miresan, R. Onet, M. Neag, M. Topa, and C. Chira, "Design options for implementing in standard CMOS drivers for MEMS body biasing," Microelectronics Journal, vol. 97, Mar 2020, Art no. 104705, doi: 10.1016/j.mejo.2020.104705.

[241]V. N. Mishra, P. Sharma, and M. M. Birou, "Approximation by modified Jain-Baskakov operators," Georgian Mathematical Journal, vol. 27, no. 3, pp. 403-412, Sep 2020, doi: 10.1515/gmj-2019-2008.

[242]Z. Mital'ova et al., "Destructive Testing of Wood Plastic Composite," Materiale Plastice, vol. 57, no. 2, pp. 208-214, Jun 2020, doi: 10.37358/mp.20.2.5367.

[243]D. A. Mocanu et al., "PLC Automation and Control Strategy in a Stirling Solar Power System," Energies, vol. 13, no. 8, Apr 2020, Art no. 1917, doi: 10.3390/en13081917.

[244]A. Moldovan et al., "Quality and Health Risk Assessment Associated with Water Consumption-A Case Study on Karstic Springs," Water, vol. 12, no. 12, Dec 2020, Art no. 3510, doi: 10.3390/w12123510.

[245]D. Moldovan, I. Anghel, T. Cioara, and I. Salomie, "Adapted Binary Particle Swarm Optimization for Efficient Features Selection in the Case of Imbalanced Sensor Data," Applied Sciences-Basel, vol. 10, no. 4, Feb 2020, Art no. 1496, doi: 10.3390/app10041496.

[246]M. A. Moldovan et al., "Bone Reaction to a Newly Developed Fiber-reinforced Composite Material for Craniofacial Implants," Materiale Plastice, vol. 57, no. 2, pp. 131-139, Jun 2020, doi: 10.37358/mp.20.2.5359.

[247]I. C. Morarescu, V. S. Varma, L. Busoniu, and S. Lasaulce, "Space-time budget allocation policy design for viral marketing," Nonlinear Analysis-Hybrid Systems, vol. 37, Aug 2020, Art no. 100899, doi: 10.1016/j.nahs.2020.100899.

[248]N. Mozaffari et al., "New Insights into SnO2/Al2O3, Ni/Al2O3, and SnO2/Ni/Al2O3 Composite Films for CO Adsorption: Building a Bridge between Microstructures and Adsorption Properties," Journal of Physical Chemistry C, vol. 124, no. 6, pp. 3692-3701, Feb 2020, doi: 10.1021/acs.jpcc.9b11148.

[249]R. A. Munteanu, S. Banuleasa, A. Rusu, and D. G. Butacu, "Acquisition and Transmission of ECG Signals Through Stainless Steel Yarn Embroidered in Shirts," Advances in Electrical and Computer Engineering, vol. 20, no. 2, pp. 73-78, May 2020, doi: 10.4316/aece.2020.02009.

[250]C. I. Muresan, I. R. Birs, and E. H. Dulf, "Event-Based Implementation of Fractional Order IMC Controllers for Simple FOPDT Processes," Mathematics, vol. 8, no. 8, Aug 2020, Art no. 1378, doi: 10.3390/math8081378.

[251]C. I. Muresan and C. M. Ionescu, "Generalization of the FOPDT Model for Identification and Control Purposes," Processes, vol. 8, no. 6, Jun 2020, Art no. 682, doi: 10.3390/pr8060682.

[252]M. P. Muresan, I. Giosan, and S. Nedevschi, "Stabilization and Validation of 3D Object Position Using Multimodal Sensor Fusion and Semantic Segmentation," Sensors, vol. 20, no. 4, Feb 2020, Art no. 1110, doi: 10.3390/s20041110.

[253]M. Muste et al., "Revisiting hysteresis of flow variables in monitoring unsteady streamflows," Journal of Hydraulic Research, vol. 58, no. 6, pp. 867-887, Nov 2020, doi: 10.1080/00221686.2020.1786742.

[254]A. E. Musteata, G. Pelin, M. Botan, A. Popescu, and L. Deleanu, "The Behavior of Polymeric Blends (PP+PA6) in Tensile Tests," Materiale Plastice, vol. 57, no. 1, pp. 153-166, Mar 2020, doi: 10.37358/mp.20.1.5322.

[255]A. L. Nan, M. Suciu, I. Ardelean, M. Senila, and R. Turcu, "Characterization of the Nuclear Magnetic Resonance Relaxivity of Gadolinium Functionalized Magnetic Nanoparticles," Analytical Letters, vol. 54, no. 1-2, pp. 124-139, Jan 2021, doi: 10.1080/00032719.2020.1731522.

[256]M. I. Nan et al., "Mono- and di-substituted pyrene-based donor-pi-acceptor systems with phenyl and thienyl pi-conjugating bridges," Dyes and Pigments, vol. 181, Oct 2020, Art no. 108527, doi: 10.1016/j.dyepig.2020.108527.

[257]M. Nasui, R. B. Sonher, T. Petrisor, S. Varodi, C. Pop, and L. Ciontea, "Development of a Fluorine-Free Polymer-Assisted-Deposition Route for YBa2Cu3O7-x Superconducting Films," Coatings, vol. 10, no. 10, Oct 2020, Art no. 966, doi: 10.3390/coatings10100966.

[258]E. Neag, A. I. Torok, C. Tanaselia, I. Aschilean, and M. Senila, "Kinetics and Equilibrium Studies for the Removal

of Mn and Fe from Binary Metal Solution Systems Using a Romanian Thermally Activated Natural Zeolite," Water, vol. 12, no. 6, Jun 2020, Art no. 1614, doi: 10.3390/w12061614.

[259] B. V. Neamtu et al., "Properties of soft magnetic composites based on Fe fibres coated with SiO2 by hydrothermal method," Journal of Alloys and Compounds, vol. 826, Jun 2020, Art no. 154222, doi: 10.1016/j.jallcom.2020.154222.

[260] B. V. Neamtu, A. Irimie, F. Popa, M. S. Gabor, T. F. Marinca, and I. Chicinas, "Soft magnetic composites based on oriented short Fe fibres coated with polymer," Journal of Alloys and Compounds, vol. 840, Nov 2020, Art no. 155731.

[261] M. Neckebroek, M. Ghita, D. Copot, and C. M. Ionescu, "Pain Detection with Bioimpedance Methodology from 3-Dimensional Exploration of Nociception in a Postoperative Observational Trial," Journal of Clinical Medicine, vol. 9, no. 3, Mar 2020, Art no. 684, doi: 10.3390/jcm9030684.

[262] M. Nedelcu, "Semi-Analytical Solutions for the Uniformly Compressed Simply Supported Plate with Large Deflections," International Journal of Structural Stability and Dynamics, vol. 20, no. 9, Aug 2020, Art no. 2050108, doi: 10.1142/s0219455420501084.

[263] I. Negrean, A. V. Crisan, and S. Vlase, "A New Approach in Analytical Dynamics of Mechanical Systems," Symmetry-Basel, vol. 12, no. 1, Jan 2020, Art no. 95, doi: 10.3390/sym12010095.

[264] D. Nemes et al., "Characterization of the Paint Used by Dumitru Ispas in the Wooden Straja Church, Cluj County, Romania," Analytical Letters, vol. 54, no. 1-2, pp. 255-264, Jan 2021, doi: 10.1080/00032719.2020.1749649.

[265] R. O. Nemes, S. M. Ciornei, M. Ruba, and C. Martis, "Real-time simulation of scaled propulsion unit for light electric vehicles," Electrical Engineering, vol. 102, no. 1, pp. 43-52, Mar 2020, doi: 10.1007/s00202-019-00773-1.

[266] D. D. B. Nergis, P. Vizureanu, I. Ardelean, A. V. Sandu, O. C. Corbu, and E. Matei, "Revealing the Influence of Microparticles on Geopolymers' Synthesis and Porosity," Materials, vol. 13, no. 14, Jul 2020, Art no. 3211, doi: 10.3390/ma13143211.

[267] T. Nestor, N. J. De Dieu, K. Jacques, E. J. Yves, A. M. Iliyasu, and A. A. Abd El-Latif, "A Multidimensional Hyperjerk Oscillator: Dynamics Analysis, Analogue and Embedded Systems Implementation, and Its Application as a Cryptosystem," Sensors, vol. 20, no. 1, Jan 2020, Art no. 83, doi: 10.3390/s20010083.

[268] C. Nica, V. P. Almasan, and A. Groza, "FastRCA-Seq: An efficient approach for extracting hierarchies of multilevel closed partially-ordered patterns," Knowledge-Based Systems, vol. 210, Dec 2020, Art no. 106533, doi: 10.1016/j.knosys.2020.106533.

[269] L. M. Nicula, O. Corbu, M. Iliescu, and D. G. Dumitras, "USING THE BLAST FURNACE SLAG AS ALTERNATIVE SOURCE IN MIXTURES FOR THE ROAD CONCRETE FOR A MORE SUSTAINABLE AND A CLEANER ENVIRONMENT," Revista Romana De Materiale-Romanian Journal of Materials, vol. 50, no. 4, pp. 545-555, 2020.

[270] S. Noveanu, I. A. Ivan, D. C. Noveanu, C. Rusu, and D. Lates, "SiMFlex Micromanipulation Cell with Modular Structure," Applied Sciences-Basel, vol. 10, no. 8, Feb 2020, Art no. 2861, doi: 10.3390/app10082861.

[271] N. Ojha, M. Bogdan, R. Galatus, and L. Petit, "Effect of heat-treatment on the upconversion of NaYF4:Yb3+, Er3+ nanocrystals containing silver phosphate glass," Journal of Non-Crystalline Solids, vol. 544, Sep 2020, Art no. 120243, doi: 10.1016/j.jnoncrysol.2020.120243.

[272] B. Oniga, L. Denis, V. Dadarlat, and A. Munteanu, "Message-Based Communication for Heterogeneous Internet of Things Systems," Sensors, vol. 20, no. 3, Feb 2020, Art no. 861, doi: 10.3390/s20030861.

[273] N. Pakkaranang, P. Kumam, V. Berinde, and Y. I. Suleiman, "Superiorization methodology and perturbation resilience of inertial proximal gradient algorithm with application to signal recovery," Journal of Supercomputing, vol. 76, no. 12, pp. 9456-9477, Dec 2020, doi: 10.1007/s11227-020-03215-z.

[274] V. Pascalau et al., "Development of BSA gel/Pectin/Chitosan polyelectrolyte complex microcapsules for Berberine delivery and evaluation of their inhibitory effect on Cutibacterium acnes," Reactive & Functional Polymers, vol. 147, Feb 2020, Art no. 104457, doi: 10.1016/j.reactfunctpolym.2019.104457.

[275] P. Pascuta, R. Stefan, L. E. Olar, L. C. Bolundut, and E. Culea, "Effects of Copper Metallic Nanoparticles on Structural and Optical Properties of Antimony Phosphate Glasses Co-Doped with Samarium Ions," Materials, vol. 13, no. 21, Nov 2020, Art no. 5040, doi: 10.3390/ma13215040.

[276] M. Paunescu, F. Dragan, D. D. Micu, A. R. Iusan, and D. Paunescu, "MATERIAL DISTRIBUTION IN ELECTRICAL FUSES USING ARHENIUS' EQUATIONS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 433-436, Nov 2020.

[277] S. G. Pavel, V. Maier, C. Ciorca, H. G. Beleiu, and I. Birou, "Optimal Design of the Vertical Earthing with Electrodes Arranged in Line," Applied Sciences-Basel, vol. 10, no. 3, Feb 2020, Art no. 1177, doi: 10.3390/app10031177.

[278] M. Perini, P. Bosetti, and N. Balc, "Additive manufacturing for repairing: from damage identification and modeling to DLD," Rapid Prototyping Journal, vol. 26, no. 5, pp. 929-940, Jan 2020, doi: 10.1108/rpj-03-2019-0090.

[279] A. Peter et al., "Multi-analyses of gallstones and correlation between their properties with the laboratory results,"

Analytical Biochemistry, vol. 593, Mar 2020, Art no. 113587, doi: 10.1016/j.ab.2020.113587.

[280] D. Petreus, R. Etz, T. Patarau, and I. Ciocan, "Comprehensive Analysis of a High-Power Density Phase-Shift Full Bridge Converter Highlighting the Effects of the Parasitic Capacitances," Energies, vol. 13, no. 6, Mar 2020, Art no. 1439, doi: 10.3390/en13061439.

[281] J. Pilthammar, D. Banabic, and M. Sigvant, "BBC05 with non-integer exponent and ambiguities in Nakajima yield surface calibration," International Journal of Material Forming, vol. 14, no. 4, pp. 577-592, Jul 2021, doi: 10.1007/s12289-020-01545-0.

[282] D. Pisla et al., "Risk Management for the Reliability of Robotic Assisted Treatment of Non-resectable Liver Tumors," Applied Sciences-Basel, vol. 10, no. 1, Jan 2020, Art no. 52, doi: 10.3390/app10010052.

[283] D. Planeta et al., "PROCESS AND PRODUCT OPTIMIZATION IN THE ARTISANAL PRODUCTION OF SICILIAN COFFE GELATO," Carpathian Journal of Food Science and Technology, vol. 12, no. 4, pp. 12-20, 2020, doi: 10.34302/crpjfst/2020.12.4.2.

[284] C. D. Pop, M. Antal, T. Cioara, I. Anghel, and L. Salomie, "Blockchain and Demand Response: Zero-Knowledge Proofs for Energy Transactions Privacy," Sensors, vol. 20, no. 19, Oct 2020, Art no. 5678, doi: 10.3390/s20195678.

[285] C. V. Pop, D. Fodorean, C. Husar, and C. Irimia, "Structural behavior evaluation of an in-wheel motor based on numerical and experimental approach," Electrical Engineering, vol. 102, no. 1, pp. 65-74, Mar 2020, doi: 10.1007/s00202-019-00774-0.

[286] F. Pop and C. A. Semeniuc, "Effects of heating temperature and ascorbyl palmitate on the oxidative stability of alimentary poultry fats," Rivista Italiana Delle Sostanze Grasse, vol. 97, no. 3, pp. 55-64, Jul-Sep 2020.

[287] L. Pop et al., "Characteristics and local structure of hafnia-silicate-zirconate ceramic nanomixtures," Journal of Synchrotron Radiation, vol. 27, pp. 970-978, Jul 2020, doi: 10.1107/s1600577520006207.

[288] M. Pop and D. Frunza, "ASPECTS REGARDING THE INFLUENCE OF EXTERNAL FRICTION CONDITIONS ON MATERIALS FORMABILITY," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 367-372, Nov 2020.

[289] M. Pop, A. Neag, D. Frunza, and F. Popa, "THERMOMECHANICAL ANALYSIS OF PLASTIC DEFORMATION BEHAVIOUR IN DIELESS DRAWING OF METALLIC MATERIALS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 129-136, Jun 2020.

[290] O. L. Pop et al., "Cerium Oxide Nanoparticles and Their Efficient Antibacterial ApplicationIn Vitroagainst Gram-Positive and Gram-Negative Pathogens," Nanomaterials, vol. 10, no. 8, Aug 2020, Art no. 1614, doi: 10.3390/nano10081614.

[291] D. C. Popa, N. F. Jurca, R. A. Inte, N. Hrusch, J. Hemphill, and C. G. Cantemir, "Zero-Airgap Induction Motor Used to Drive a Transmission Oil Pump," Energies, vol. 13, no. 17, Sep 2020, Art no. 4286, doi: 10.3390/en13174286.

[292] D. I. Popescu, "Case Study of the Environmental Noise and its Perception in the City of Cluj-Napoca, Romania," Archives of Acoustics, vol. 45, no. 4, pp. 625-631, 2020, doi: 10.24425/aoa.2020.135250.

[293] S. Popescu, D. Rusu, M. Dragomir, D. Popescu, and S. Nedelcu, "Competitive Development Tools in Identifying Efficient Educational Interventions for Improving Pro-Environmental and Recycling Behavior," International Journal of Environmental Research and Public Health, vol. 17, no. 1, Jan 2020, Art no. 156, doi: 10.3390/ijerph17010156.

[294] S. Popescu, R. Santa, F. Teleaba, and H. Ilesan, "A structured framework for identifying risks sources related to human resources in a 4.0 working environment perspective," Human Systems Management, vol. 39, no. 4, pp. 511-527, 2020, doi: 10.3233/hsm-201034.

[295] F. Popister, M. Steopan, and A. Pusca, "SURVEILLANCE ROBOT FOR MILITARY USE," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 261-264, Sep 2020.

[296] M. Prada et al., "New solutions to reduce greenhouse gas emissions through energy efficiency of buildings of special importance - Hospitals," Science of the Total Environment, vol. 718, May 2020, Art no. 137446, doi: 10.1016/j.scitotenv.2020.137446.

[297] A. S. Priya, D. Geetha, and S. Talu, "Advanced micromorphology study of the Mn-doped bismuth ferrite thin films," Materials Letters, vol. 281, Dec 2020, Art no. 128615, doi: 10.1016/j.matlet.2020.128615.

[298] E. Puschita et al., "A UWB solution for wireless intra-spacecraft transmissions of sensor and SpaceWire data," International Journal of Satellite Communications and Networking, vol. 38, no. 1, pp. 41-61, Jan 2020, doi: 10.1002/sat.1307.

[299] M. S. Raboaca, I. Bancescu, V. Preda, and N. Bizon, "An Optimization Model for the Temporary Locations of Mobile Charging Stations," Mathematics, vol. 8, no. 3, Mar 2020, Art no. 453, doi: 10.3390/math8030453.

[300] M. S. Raboaca, N. Bizon, C. Trufin, and F. M. Enescu, "Efficient and Secure Strategy for Energy Systems of Interconnected Farmers ' Associations to Meet Variable Energy Demand," Mathematics, vol. 8, no. 12, Dec 2020, Art no. 2182, doi: 10.3390/math8122182.

[301]M. S. Raboaca, C. Dumitrescu, C. Filote, and I. Manta, "A New Adaptive Spatial Filtering Method in the Wavelet Domain for Medical Images," Applied Sciences-Basel, vol. 10, no. 16, Aug 2020, Art no. 5693, doi: 10.3390/app10165693.

[302]M. S. Raboaca, C. Dumitrescu, and I. Manta, "Aircraft Trajectory Tracking Using Radar Equipment with Fuzzy Logic Algorithm," Mathematics, vol. 8, no. 2, Feb 2020, Art no. 207, doi: 10.3390/math8020207.

[303]L. Racz and M. C. Dudescu, "EVALUATION OF IMPACT PROPRIETIES OF 3D PRINTED MATERIALS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 437-442, Nov 2020.

[304]C. R. Rad, O. Hancu, and C. Lapusan, "ASPECTS REGARDING "SOFT" GRASPING IN SMART AGRICULTURAL HARVESTING TASKS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 389-394, Nov 2020.

[305]S. Rada, M. Unguresan, M. Rada, C. Tudoran, J. O. Wang, and E. Culea, "Performance of the Recycled and Copper-Doped Materials from Spent Electrodes by XPS and Voltammetric Characteristics," Journal of the Electrochemical Society, vol. 167, no. 9, Jun 2020, Art no. 090548, doi: 10.1149/1945-7111/ab981f.

[306]C. Radu et al., "Integration of Real-Time Image Fusion in the Robotic-Assisted Treatment of Hepatocellular Carcinoma," Biology-Basel, vol. 9, no. 11, Nov 2020, Art no. 397, doi: 10.3390/biology9110397.

[307]C. Raducan, A. T. Grajdeanu, C. S. Plesa, M. Neag, A. Negoita, and M. D. Topa, "LDO With Improved Common Gate Class-AB OTA Handles any Load Capacitors and Provides Fast Response to Load Transients," Ieee Transactions on Circuits and Systems I-Regular Papers, vol. 67, no. 11, pp. 3740-3752, Nov 2020, doi: 10.1109/tcsi.2020.3012376.

[308]C. M. Radulescu, S. Slava, A. T. Radulescu, R. Toader, D. C. Toader, and G. D. Boca, "A Pattern of Collaborative Networking for Enhancing Sustainability of Smart Cities," Sustainability, vol. 12, no. 3, Feb 2020, Art no. 1042, doi: 10.3390/su12031042.

[309]A. Ranjan, M. Kaushik, D. Deb, V. Muresan, and M. Unguresan, "Assessment of Short Rectangular-Tab Actuation of Supersonic Jet Mixing," Actuators, vol. 9, no. 3, Sep 2020, Art no. 72, doi: 10.3390/act9030072.

[310]L. Rece et al., "Optimization of the 2 1/2 D Processing Method of Complex Parts, through a Predictive Algorithm for Controlling the Geometric Shape Deviations Resulting from Processing," Mathematics, vol. 8, no. 1, Jan 2020, Art no. 59, doi: 10.3390/math8010059.

[311]O. M. Rosca et al., "Impact of anthropogenic activities on water quality parameters of glacial lakes from Rodnei mountains, Romania," Environmental Research, vol. 182, Mar 2020, Art no. 109136, doi: 10.1016/j.envres.2020.109136.

[312]R. S. Rozsos, Z. L. Buna, S. Bodi, R. Comes, and V. Tompa, "DESIGN AND DEVELOPMENT OF A LINEAR DELTA 3D PRINTER," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 2, pp. 185-190, Jun 2020.

[313]M. Ruba, R. O. Nemes, S. M. Ciornei, and C. Martis, "Simple and Robust Current Sensor Fault Detection and Compensation Method for 3-Phase Inverters," Ieee Access, vol. 8, pp. 34820-34832, 2020, doi: 10.1109/access.2020.2974769.

[314]L. Rus, S. E. Avram, and V. Micle, "DETERMINATION AND ASSESSMENTS OF PHYSICO-CHEMICAL PARAMETERS OF THE WATER FROM ANTHROPO-SALINE LAKES LOCATED IN THE PROTECTED AREA "SALINA TURDA", ROMANIA," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 2, pp. 257-268, 2020, doi: 10.24193/subbchem.2020.2.21.

[315]C. I. Rusan and C. Ciupan, "STATIC AND MODAL ANALYSIS OF HIGH-SPEED CNC MILLING SPINDLE," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 443-450, Nov 2020.

[316]M. Rusca, T. A. Rusu, and A. Suciu, "CASE STUDY ON PARTICULATE MATTER (PM) POLLUTION IN LARGE CITIES," Journal of Environmental Protection and Ecology, vol. 21, no. 4, pp. 1179-1185, 2020.

[317]C. Rusu and M. O. Tatar, "DESIGN OF AN INSPECTION ROBOT BASED ON THE PANTOGRAPH MECHANISM," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 265-268, Sep 2020.

[318]D. M. Rusu, C. M. Biris, A. Ianosi-Andreeva-Dimitrova, and E. Pirpidel, "DESIGNING AN ANIMATRONIC HUMANOID ROBOTIC HEAD," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp. 461-466, Nov 2020.

[319]E. Sabau, R. Udroiu, P. Bere, I. Buransky, and C. S. Miron-Borzan, "A Novel Polymer Concrete Composite with GFRP Waste: Applications, Morphology, and Porosity Characterization," Applied Sciences-Basel, vol. 10, no. 6, Mar 2020, Art no. 2060, doi: 10.3390/app10062060.

[320]C. Sabo, P. C. Pop, and A. Horvat-Marc, "On the Selective Vehicle Routing Problem," Mathematics, vol. 8, no. 5, May 2020, Art no. 771, doi: 10.3390/math8050771.

[321]M. Sajgalik et al., "Analysis and Prediction of the Machining Force Depending on the Parameters of Trochoidal Milling of Hardened Steel," Applied Sciences-Basel, vol. 10, no. 5, Mar 2020, Art no. 1788, doi:

10.3390/app10051788.

[322] S. Saracli, B. Tunca, and G. D. Boca, "DETERMINING THE EFFECTIVE FACTORS ON UNIVERSITY STUDENTS' ENVIRONMENTAL PROTECTION BEHAVIORS," Fresenius Environmental Bulletin, vol. 29, no. 7A, pp. 5675-5680, 2020.

[323] M. T. Sattari, A. Avram, H. Apaydin, and O. Matei, "Soil Temperature Estimation with Meteorological Parameters by Using Tree-Based Hybrid Data Mining Models," Mathematics, vol. 8, no. 9, Sep 2020, Art no. 1407, doi: 10.3390/math8091407.

[324] C. Schonstein, M. Steopan, and A. V. Bogdan, "GEOMETRICAL AND KINEMATICAL CONTROL FUNCTIONS FOR A MOBILE ROBOT USED IN EXTINGUISHING FIRES," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 275-280, Sep 2020.

[325] F. M. Serban, S. Grozav, V. Ceclan, and A. Turcu, "Artificial Neural Networks Model for Springback Prediction in the Bending Operations," Tehnicki Vjesnik-Technical Gazette, vol. 27, no. 3, pp. 868-873, Jun 2020, doi: 10.17559/tv-20141209182117.

[326] F. M. Serban, C. E. Stoenoiu, and C. Cristea, "The Analysis of Government Expenditures in the European Union," Problemy Ekorozwoju, vol. 15, no. 2, pp. 143-151, 2020.

[327] F. Serdean, M. Pustan, C. Dudescu, C. Birleanu, and M. Serdean, "Analysis of the Thermoelastic Damping Effect in Electrostatically Actuated MEMS Resonators," Mathematics, vol. 8, no. 7, Jul 2020, Art no. 1124, doi: 10.3390/math8071124.

[328] P. Sestras et al., "Feasibility Assessments Using Unmanned Aerial Vehicle Technology in Heritage Buildings: Rehabilitation-Restoration, Spatial Analysis and Tourism Potential Analysis," Sensors, vol. 20, no. 7, Apr 2020, Art no. 2054, doi: 10.3390/s20072054.

[329] R. Shakoury, A. Arman, S. Talu, D. Dastan, C. Luna, and S. Rezaee, "Stereometric analysis of TiO2 thin films deposited by electron beam ion assisted," Optical and Quantum Electronics, vol. 52, no. 5, May 2020, Art no. 270, doi: 10.1007/s11082-020-02388-4.

[330] R. Shakoury et al., "Optical properties, microstructure, and multifractal analyses of ZnS thin films obtained by RF magnetron sputtering," Journal of Materials Science-Materials in Electronics, vol. 31, no. 7, pp. 5262-5273, Apr 2020, doi: 10.1007/s10854-020-03086-3.

[331] R. Shakoury et al., "Multifractal and optical bandgap characterization of Ta2O5 thin films deposited by electron gun method," Optical and Quantum Electronics, vol. 52, no. 2, Jan 2020, Art no. 95, doi: 10.1007/s11082-019-2173-5.

[332] J. R. Sharma, S. Kumar, and L. Jantschi, "On Derivative Free Multiple-Root Finders with Optimal Fourth Order Convergence," Mathematics, vol. 8, no. 7, Jul 2020, Art no. 1091, doi: 10.3390/math8071091.

[333] M. A. Sheremet, D. S. Cimpean, and I. Pop, "Thermogravitational Convection of Hybrid Nanofluid in a Porous Chamber with a Central Heat-Conducting Body," Symmetry-Basel, vol. 12, no. 4, Apr 2020, Art no. 593, doi: 10.3390/sym12040593.

[334] T. Sienko, J. Szczepanik, and C. Martis, "Reactive Power Transfer via Matrix Converter Controlled by the "One Periodical" Algorithm," Energies, vol. 13, no. 3, Feb 2020, Art no. 665, doi: 10.3390/en13030665.

[335] I. Smical, A. Muntean, D. Ciurte, and V. Micle, "RESEARCH ON THE HEAVY METALS IN SURFACE SEDIMENTS, IN STRAMTORI-FIRIZA RESERVOIR, SITUATED IN N-W OF ROMANIA," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 4, pp. 95-107, 2020, doi: 10.24193/subbchem.2020.4.08.

[336] S. Solaymani et al., "Multiscale Surface Microtexture Analysis of CuNPs@a-C:H Thin Films," Industrial & Engineering Chemistry Research, vol. 59, no. 52, pp. 22520-22532, Dec 2020, doi: 10.1021/acs.iecr.0c04807.

[337] S. Solaymani et al., "Multifractal analysis of human canine teeth at nano scale: atomic force microscopy studies," International Nano Letters, vol. 10, no. 1, pp. 15-22, Mar 2020, doi: 10.1007/s40089-019-00293-7.

[338] S. Solaymani, S. Talu, N. B. Nezafat, S. Rezaee, and M. F. Kenari, "Diamond nanocrystal thin films: Case study on surface texture and power spectral density properties," Aip Advances, vol. 10, no. 4, Apr 2020, Art no. 045206, doi: 10.1063/5.0003866.

[339] S. Solaymani, R. P. Yadav, S. Talu, A. Achour, S. Rezaee, and N. B. Nezafat, "Averaged power spectrum density, fractal and multifractal spectra of Au nano-particles deposited onto annealed TiO2 thin films," Optical and Quantum Electronics, vol. 52, no. 11, Oct 2020, Art no. 491, doi: 10.1007/s11082-020-02584-2.

[340] C. Somesan, L. C. Bolundut, L. Olar, V. Pop, and L. David, "THE INFLUENCE OF V2O5 ON SPECTROSCOPIC AND OPTICAL PROPERTIES OF MgO-KPO3 GLASSES CO-DOPED WITH Ag2O," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 2, pp. 161-170, 2020, doi: 10.24193/subbchem.2020.2.13.

[341] R. B. Sonher et al., "Single Source Precursor for PAD-LaMnO3 Thin Films," Crystals, vol. 10, no. 9, Sep 2020, Art no. 851, doi: 10.3390/cryst10090851.

[342] S. Stach, S. Talu, R. Dallaev, A. Arman, D. Sobola, and M. Salerno, "Evaluation of the Topographical Surface Changes of Silicon Wafers after Annealing and Plasma Cleaning," Silicon, vol. 12, no. 11, pp. 2563-2570, Nov 2020, doi: 10.1007/s12633-019-00351-x.

[343]M. Steopan, C. Schonstein, and A. V. Bogdan, "MOBILE ROBOTIC PLATFORM FOR FIREFIGHTING-CONCEPT DEVELOPMENT, FINISSING AND MOCKUP BUILDUP," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 3, pp. 269-274, Sep 2020.

[344]R. L. Sumalan et al., "A Cost-Effective Embedded Platform for Greenhouse Environment Control and Remote Monitoring," Agronomy-Basel, vol. 10, no. 7, Jul 2020, Art no. 936, doi: 10.3390/agronomy10070936.

[345]I. M. Sur, V. Micle, and G. E. Damian, "ASSESSMENT OF HEAVY METAL CONTAMINATION AND BIOREMEDIATION POTENTIAL OF Thiobacillus ferrooxidans IN SOILS AROUND COPPER QUARRY," Journal of Environmental Protection and Ecology, vol. 21, no. 1, pp. 56-62, 2020.

[346]J. Suto, S. Oniga, C. Lung, and I. Orha, "Comparison of offline and real-time human activity recognition results using machine learning techniques," Neural Computing & Applications, vol. 32, no. 20, pp. 15673-15686, Oct 2020, doi: 10.1007/s00521-018-3437-x.

[347]S. Talu, S. Abdolghaderi, E. P. Pinto, R. S. Matos, and M. Salerno, "Advanced fractal analysis of nanoscale topography of Ag/DLC composite synthesized by RF-PECVD," Surface Engineering, vol. 36, no. 7, pp. 713-719, Jul 2020, doi: 10.1080/02670844.2019.1710937.

[348]S. Talu et al., "Micromorphology analysis of TiO2 thin films by atomic force microscopy images: The influence of postannealing," Microscopy Research and Technique, vol. 83, no. 5, pp. 457-463, May 2020, doi: 10.1002/jemt.23433.

[349]S. Talu, B. Astinchap, S. Abdolghaderi, A. Shafiekhani, and I. A. Morozov, "Multifractal investigation of Ag/DLC nanocomposite thin films," Scientific Reports, vol. 10, no. 1, Dec 2020, Art no. 22266, doi: 10.1038/s41598-020-79455-z.

[350]S. Talu, S. Kulesza, M. Bramowicz, H. Saglam, and R. Kus, "Fractal geometry of internal thread surfaces manufactured by cutting tap and rolling tap," Manufacturing Letters, vol. 23, pp. 34-38, Jan 2020, doi: 10.1016/j.mfglet.2019.12.001.

[351]S. Talu et al., "Surface micromorphology characterization of PDI8-CN2 thin films on H-Si by AFM analysis," Materials Science-Poland, vol. 38, no. 2, pp. 334-340, Jun 2020, doi: 10.2478/msp-2020-0033s.

[352]S. Talu, R. S. Matos, E. P. Pinto, S. Rezaee, and M. Mardani, "Stereometric and fractal analysis of sputtered Ag-Cu thin films," Surfaces and Interfaces, vol. 21, Dec 2020, Art no. 100650, doi: 10.1016/j.surfin.2020.100650.

[353]S. Talu, H. Saglam, R. Kus, M. Bramowicz, and S. Kulesza, "Experimental investigations of threads surface integrity manufactured by cutting insert and with internal thread rolling head," Cirp Journal of Manufacturing Science and Technology, vol. 31, pp. 334-341, Nov 2020, doi: 10.1016/j.cirpj.2020.06.007.

[354]S. Talu, D. P. Shcherbinin, E. A. Konshina, and I. A. Gladskikh, "Stereometric and fractal analysis of granulated silver films used in thin-film hybrid structures," Journal of Microscopy, vol. 281, no. 1, pp. 46-56, Jan 2021, doi: 10.1111/jmi.12948.

[355]S. Talu, S. Solaymani, S. Rezaee, and N. B. Nezafat, "The evaluation of surface topography changes in nanoscaled 2,6-diphenyl anthracene thin films by atomic force microscopy," Microscopy Research and Technique, vol. 84, no. 1, pp. 89-100, Jan 2021, doi: 10.1002/jemt.23569.

[356]D. R. Tamas-Gavrea, T. O. Denes, R. Istoan, A. E. Tiuc, D. L. Manea, and O. Vasile, "A Novel Acoustic Sandwich Panel Based on Sheep Wool," Coatings, vol. 10, no. 2, Feb 2020, Art no. 148, doi: 10.3390/coatings10020148.

[357]S. G. Tere, B. Heghes, and H. Constantinescu, "An Investigation on Sheeting Acting as a Diaphragm on a Reinforced Precast Concrete Frame," Periodica Polytechnica-Civil Engineering, vol. 64, no. 4, pp. 1153-1161, 2020, doi: 10.3311/PPci.16023.

[358]G. Thalmaier et al., "Influence of sawdust particle size on fired clay brick properties," Materiales De Construccion, vol. 70, no. 338, Apr-Jun 2020, Art no. e215, doi: 10.3989/mc.2020.04219.

[359]G. Thalmaier, N. A. Sechel, and I. Vida-Simiti, "Syntactic Aluminum Foam from Recycled Sawing Chips," Jom, vol. 72, no. 10, pp. 3377-3382, Oct 2020, doi: 10.1007/s11837-020-04282-6.

[360]C. Ticala, I. Zelina, and C. M. Pintea, "Admissible Perturbation of Demicontractive Operators within Ant Algorithms for Medical Images Edge Detection," Mathematics, vol. 8, no. 6, Jun 2020, Art no. 1040, doi: 10.3390/math8061040.

[361]D. C. Toader et al., "The Effect of Social Presence and Chatbot Errors on Trust," Sustainability, vol. 12, no. 1, Jan 2020, Art no. 256, doi: 10.3390/su12010256.

[362]A. Todorut, N. Cordos, and C. Iclodean, "Replacing Diesel Buses with Electric Buses for Sustainable Public Transportation and Reduction of CO2 Emissions," Polish Journal of Environmental Studies, vol. 29, no. 5, pp. 3339-3351, 2020, doi: 10.15244/pjoes/112899.

[363]A. Todorut, A. Molea, and I. Barabas, "Predicting the Temperature and Composition - Dependent Density and Viscosity of Diesel Fuel - Ethanol Blends," Periodica Polytechnica-Chemical Engineering, vol. 64, no. 2, pp. 213-220, 2020, doi: 10.3311/PPch.14757.

[364]A. Trif and I. Ispas, "THE INFLUENCE OF MACROGEOMETRY AND CARBIDE ON THE DURABILITY OF HSC DRILLS," Acta Technica Napocensis Series-Applied Mathematics Mechanics and Engineering, vol. 63, no. 4, pp.

373-380, Nov 2020.

[365]C. Tripon, D. Dadarlat, K. Kovacs, V. P. Tosa, and M. Franko, "Thermal Effusivity Investigations of Solid Thermoelectrics Using the Front Photopyroelectric Detection," International Journal of Thermophysics, vol. 41, no. 2, Jan 2020, doi: 10.1007/s10765-019-2593-2.

[366]P. Tucan et al., "Fuzzy Logic-Based Risk Assessment of a Parallel Robot for Elbow and Wrist Rehabilitation," International Journal of Environmental Research and Public Health, vol. 17, no. 2, Jan 2020, Art no. 654, doi: 10.3390/ijerph17020654.

[367]A. Tunyagi et al., "AN INNOVATIVE SYSTEM FOR MONITORING RADON AND INDOOR AIR QUALITY," Romanian Journal of Physics, vol. 65, no. 1-2, 2020, Art no. 803.

[368]M. Ungureanu, N. S. Ungureanu, and M. Cosma, "THERMAL ANALYSIS OF THE INDUSTRIAL SHOE BRAKES TO REDUCE THE RISK OF FAILURE DURING BRAKING," Archives of Mining Sciences, vol. 65, no. 1, pp. 35-46, 2020, doi: 10.24425/ams.2020.132704.

[369]J. Upadhyay, A. Rawat, D. Deb, V. Muresan, and M. L. Unguresan, "An RSSI-Based Localization, Path Planning and Computer Vision-Based Decision Making Robotic System," Electronics, vol. 9, no. 8, Aug 2020, Art no. 1326, doi: 10.3390/electronics9081326.

[370]I. Vagelas and I. R. Sugar, "POTENTIAL USE OF OLIVE OIL MILL WASTEWATER TO CONTROL PLANT PATHOGENS AND POST HARVEST DISEASES," Carpathian Journal of Food Science and Technology, vol. 12, no. 4, pp. 140-144, 2020, doi: 10.34302/crpjfst/2020.12.4.14.

[371]C. Vaida et al., "Systematic Design of a Parallel Robotic System for Lower Limb Rehabilitation," Ieee Access, vol. 8, pp. 34522-34537, 2020, doi: 10.1109/access.2020.2974295.

[372]C. Vaida et al., "A NEW ROBOTIC SYSTEM FOR MINIMALLY INVASIVE TREATMENT OF LIVER TUMOURS," Proceedings of the Romanian Academy Series a-Mathematics Physics Technical Sciences Information Science, vol. 21, no. 3, pp. 273-280, Jul-Sep 2020.

[373]S. Vaidyanathan, E. Tlelo-Cuautle, A. Sambas, L. G. Dolvis, and O. Guillen-Fernandez, "A new four-dimensional two-scroll hyperchaos dynamical system with no rest point, bifurcation analysis, multi-stability, circuit simulation and FPGA design," International Journal of Computer Applications in Technology, vol. 63, no. 1-2, pp. 147-159, 2020, doi: 10.1504/ijcat.2020.107905.

[374]D. Vais, "Type Projects as Tools: Housing Type Design in Communist Romania," Architectural Histories, vol. 8, no. 1, Aug 2020, Art no. 10, doi: 10.5334/ah.321.

[375]B. O. Varga, F. Mariasiu, C. D. Miclea, I. Szabo, A. A. Sirca, and V. Nicolae, "Direct and Indirect Environmental Aspects of an Electric Bus Fleet Under Service," Energies, vol. 13, no. 2, Jan 2020, Art no. 336, doi: 10.3390/en13020336.

[376]S. Varvara, R. Bostan, M. Popa, L. Gaina, and F. Popa, "DOXEPIN AS CORROSION INHIBITOR FOR COPPER IN 3.5 wt. % NaCl SOLUTION," Studia Universitatis Babes-Bolyai Chemia, vol. 65, no. 3, pp. 215-226, 2020, doi: 10.24193/subbchem.2020.3.17.

[377]C. Vautrin et al., "Low-Energy Spin Precession in the Molecular Field of a Magnetic Thin Film," Annalen Der Physik, vol. 533, no. 2, Feb 2021, Art no. 2000470, doi: 10.1002/andp.202000470.

[378]A. V. Vesa et al., "Energy Flexibility Prediction for Data Center Engagement in Demand Response Programs," Sustainability, vol. 12, no. 4, Feb 2020, Art no. 1417, doi: 10.3390/su12041417.

[379]C. Vilau and M. C. Dudescu, "Investigation of Mechanical Behaviour of Expanded Polystyrene Under Compressive and Bending Loadings," Materiale Plastice, vol. 57, no. 2, pp. 199-207, Jun 2020, doi: 10.37358/mp.20.2.5366.

[380]S. Vlase, I. Negrean, M. Marin, and S. Nastac, "Kane's Method-Based Simulation and Modeling Robots with Elastic Elements, Using Finite Element Method," Mathematics, vol. 8, no. 5, May 2020, Art no. 805, doi: 10.3390/math8050805.

[381]S. Vlase, I. Negrean, M. Marin, and M. L. Scutaru, "Energy of Accelerations Used to Obtain the Motion Equations of a Three- Dimensional Finite Element," Symmetry-Basel, vol. 12, no. 2, Feb 2020, Art no. 321, doi: 10.3390/sym12020321.

[382]S. Vlase, I. Negrean, M. Marin, and M. L. Scutaru, "New analytical formalisms used in finite element analysis of robots with elastic elements," Journal of Taibah University for Science, vol. 14, no. 1, pp. 1335-1341, Jan 2020, doi: 10.1080/16583655.2020.1822049.

[383]C. Voina et al., "Antimicrobial Activity and the Effect of Green Tea Experimental Gels on Teeth Surfaces," Coatings, vol. 10, no. 6, Jun 2020, Art no. 537, doi: 10.3390/coatings10060537.

[384]Z. Vosgan, C. Mihali, M. Marian, A. Dumuta, F. Pop, and L. Mihalescu, "Evaluation of the Microbial Quality and Total Phenolic Content of a Local Smoked Cheese," Bulletin of University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca-Food Science and Technology, vol. 77, no. 1, pp. 47-53, 2020, doi: 10.15835/buasvmcn-fst:2019.0019.

[385]T. H. Wang, Q. Li, X. T. Wang, W. R. Chen, E. Breaz, and F. Gao, "A Power Allocation Method for Multistack

PEMFC System Considering Fuel Cell Performance Consistency," Ieee Transactions on Industry Applications, vol. 56, no. 5, pp. 5340-5351, Sep-Oct 2020, doi: 10.1109/tia.2020.3001254.

[386] E. Yaghoubi, D. Borza, J. Neves, A. Kumar, and H. Proenca, "An attention-based deep learning model for multiple pedestrian attributes recognition," Image and Vision Computing, vol. 102, Oct 2020, Art no. 103981, doi: 10.1016/j.imavis.2020.103981.

[387] E. Yaghoubi, F. Khezeli, D. Borza, S. V. A. Kumar, J. Neves, and H. Proenca, "Human Attribute Recognition- A Comprehensive Survey," Applied Sciences-Basel, vol. 10, no. 16, Aug 2020, Art no. 5608, doi: 10.3390/app10165608.

[388] P. R. Yan, T. Wang, M. L. Guzman, R. I. Peter, and G. Chiosis, "Chaperome Networks - Redundancy and Implications for Cancer Treatment," in Hsf1 and Molecular Chaperones in Biology and Cancer, vol. 1243, M. L. Mendillo, D. Pincus, and R. ScherzShouval Eds., (Advances in Experimental Medicine and Biology, 2020, pp. 87-99.

[389] R. Yang, Z. T. Qin, W. B. Wang, and R. Datrigant, "FAST RECOGNITION ALGORITHM OF PAVEMENT CRACKS BASED ON DEEP CONVOLUTION AND UNSUPERVISED CLUSTERING," University Politehnica of Bucharest Scientific Bulletin Series C-Electrical Engineering and Computer Science, vol. 82, no. 2, pp. 77-88, 2020.

[390] E. Zadobrischi, L. M. Cosovanu, and M. Dimian, "Traffic Flow Density Model and Dynamic Traffic Congestion Model Simulation Based on Practice Case with Vehicle Network and System Traffic Intelligent Communication," Symmetry-Basel, vol. 12, no. 7, Jul 2020, Art no. 1172, doi: 10.3390/sym12071172.

[391] M. Zagrai, M. Unguresan, S. Rada, J. Zhang, M. Pica, and E. Culea, "Local structure in gadolinium-lead-borate glasses and glass-ceramics," Journal of Non-Crystalline Solids, vol. 546, Oct 2020, Art no. 120259, doi: 10.1016/j.jnoncrysol.2020.120259.

[392] S. Q. Zhao, R. Cajo, R. De Keyser, and C. M. Ionescu, "The Potential of Fractional Order Distributed MPC Applied to Steam/Water Loop in Large Scale Ships," Processes, vol. 8, no. 4, Apr 2020, Art no. 451, doi: 10.3390/pr8040451.

[393] S. Q. Zhao, S. Liu, R. De Keyser, and C. M. Ionescu, "The Application of a New PID Autotuning Method for the Steam/Water Loop in Large Scale Ships," Processes, vol. 8, no. 2, Feb 2020, Art no. 196, doi: 10.3390/pr8020196.

RESEARCH PATENTS

LIST OF PATENTS

1. **PATENT OSIM NR. RO132781 -B1 / 30.12.2020**

   TITLE RO/EN: Procedeu de detectie a defectelor senzorilor de curent ai unui convector electronic trifazat / METHOD FOR DETECTING FAULTS IN CURRENT SENSORS OF THREE-PHASED ELECTRONIC CONVERTER, INVOLVES CHANGING VALUES OF LOOP CONTROLLER COEFFICIENTS, AND LOCKING FAULT DETECTION MECHANISM OVER REMAINING OPERATIONAL PHASES FOR SET PERIOD OF TIME

   INVENTOR(S): RUBA MIRCEA

   ABSTRACT: The method involves detecting a fault by continuously monitoring the difference between the measured instantaneous values and the current reference values on each phase. The difference is compared with a threshold value, when the difference exceeds the threshold value. The fault occurred is compensated by replacing the measured value with an estimated current value on the phase. The values of the control loop controller coefficients are changed, and the fault detection mechanism is locked over the remaining operational phases for a set period of time.

2. **PATENT OSIM NR. RO130936 -B1 / 30.12.2020**

   TITLE RO/EN: Stand pentru studiul tribocoroziunii / STAND FOR TRIBOCORROSION STUDY, HAS TABLE WITH SUPPORT SUSTAINING TWO LINEAR-DISPLACEMENT MODULES

   INVENTOR(S): VERMESAN HORATIU, CHIRA MIHAIL

   ABSTRACT: The invention relates to a stand used for carrying out experimental research necessary to determine the degradation of the surfaces of metallic materials subjected to friction, in the presence of corrosive media. According to the invention, the stand comprises a table (1) with a support (2) sustaining two linear-displacement modules (3 and 4), an electrochemical cell (5) with a work piece (6) on which a counter-piece (15) moves driven by a gearmotor (7) with a connecting rod - crank mechanism (8 and 9), the parameters of tribocorrosion being measured by means of a working electrode (22), by means of some electrodes (24 and 25) mounted in an adjustable support (27) and by means of some tensometric sensors (23) mounted on a blade spring (13).

3. **PATENT OSIM NR. RO129751 -B1 / 30.12.2020**

   TITLE RO/EN: Metoda si sistem de criptare de tip OTP bazate pe secvente aleatoare determinate din structuri ADN / OTP ENCRYPTION SYSTEM AND METHOD BASED ON RANDOM SEQUENCES DETERMINED BY DNA STRUCTURES

   INVENTOR(S): BORDA MONICA ELENA, TORNEA OLGA, TEREBES ROMULUS, MALUTAN EMIL RAUL

   ABSTRACT: The invention relates to an encryption method and system of the OTP (One-Time-Pad) type based on random sequences determined by DNA structures. The claimed encryption method consists in transmitting from an emitting part to a receiving part a secret key together with an encrypted message, the secret key being formed of a header consisting of a two-bit code (k1) which represents the manner of forming the encryption key, of a three-bit code (k2) representing the number of IDs of DNA structures used to obtain the encryption key and of a sequence (k3) of IDs of the DNA structures used to obtain the encryption key (KADN). The claimed encryption system comprises two parts: a message emitting part and a receiving part, each of the two parts consisting of a DNA data base (BD ADN), either public or private, identical to both parts, an input data block (DI), a DNA key generator (Gen KADN), a convertor of the DNA key into binary key (Conv ADN-B), a modulo-2 summator (S), a block (Easterisk) for encrypting the input data which the secret key is generated with and a block (Dasterisk) for decrypting the secret key, the encrypted message and the secret key being transmitted from the emitter to the receiver, the receiver obtaining the input data by decrypting the secret key, and continuing with the generation of the DNA key which is used to decrypt the received message.

4. **PATENT OSIM NR. RO132402 -B1 / 28.08.2020**

   TITLE RO/EN: Sistem adaptiv pentru asigurarea calitatii energiei in retelele de joasa tensiune / ADAPTIVE SYSTEM FOR ENSURING QUALITY OF ENERGY IN LOW-VOLTAGE NETWORKS CONSISTS OF A ACTIVE FILTER CONNECTED IN PARALLEL WITH THE ELECTRIC NETWORK

   INVENTOR(S): SACERDOTIANU DUMITRU, NICOLA MARCEL, CIONTU MARIAN, IVANOV SERGIU, CHINDRIS MIRCEA DORIN, CZIKER ANDREI CRISTINEL, RADU ALEXANDRU, DUMITRESCU CAMIL-SORIN

   ABSTRACT: The invention relates to an adaptive system for ensuring a certain quality of energy in low-voltage networks. According to the invention, the system consists of a first active filter (A) connected in parallel with the electric network and with a load (B) comprising a voltage inverter (101), three induction coils (108, 109 and 110) and three resistors (111, 112, 113) connected in the same point with the load (B), a measuring block (118) for the load currents, a measuring block (119) for the currents at the inverter output, a three-phased contactor (122) for connecting/disconnecting the system to/from the network and a second active filter (C) which comprises an inverter (102), a sinusoidal filter (104), three single-phase transformers (105, 106, 107) connected in series to the distribution network and a measuring block (115) for measuring the inverter output voltages.

5. **PATENT OSIM NR. RO133200 -B1 / 28.08.2020**

TITLE RO/EN: Sistem de fixare a sticlelor de plastic pentru aparate rotative de testare a etanseitatii / SYSTEM FOR FIXING PLASTIC BOTTLES IN ROTARY TIGHTNESS TESTING APPARATUS, HAS ONE BOTTLE FIXING DEVICE THAT IS LOCATED ABOVE CONVEYOR WHICH FEEDS ROTARY TABLE WITH BOTTLES AND OTHER BOTTLE FIXING DEVICE WHICH TAKES BOTTLES AWAY FROM TABLE

INVENTOR(S): UNGUREANU MIORITA, MARINA MARIAN GABRIEL, STOICOVICI DINU IOAN, UNGUREANU NICOLAE STELIAN

ABSTRACT: The system has a rotary bottle fixing device which consists of a metal drum on which a rubber bush is fixed by some fastening discs. The rubber bush has the profile and the grooves pitch identical with the belt of the linear fixing devices, in order to provide the bottle transfer to and from the rotary table. Two identical bottle fixing linear devices consists of two vertical drums on which a profiled rubber belt with textile insertion is mounted. The belt is provided on its external face with grooves sized depending on the bottle shapes. One bottle fixing device is located above the conveyor which feeds the rotary table with bottles and the other bottle fixing device is located above the conveyor which takes the bottles away from the rotary table.

6. **PATENT OSIM NR. RO128582 -B1 / 30.07.2020**

TITLE RO/EN: Analizor miniaturizat pentru determinarea simultana a elementelor din microprobe lichide prin spectrometrie de emisie optica / MINIATURIZED ANALYSER WITH RHODIUM-FILAMENT EVAPORATOR FOR SIMULTANEOUS DETERMINATION OF ELEMENTS FROM LIQUID MICRO SAMPLES BY OPTICAL EMISSION SPECTROMETRY

INVENTOR(S): FRENTIU TIBERIU, PONTA MIHAELA-LUCIA, DARVASI EIUGEN, BUTACIU SINZIANA, CADAR SERGIU IULIAN, SENILA MARIN, MATHE ALEXANDRU, FRENTIU MARIA, PETREUS DORIN-MARIUS, ETZ RADU, PUSKAS FERENC, SULEA DORIN

ABSTRACT: The invention relates to a miniaturized analyser with rhodium-filament evaporator for simultaneous determination of elements from liquid micro samples, by optical emission spectrometry, employed as analytical instrument. According to the invention, the analyser comprises: a plasma micro torch (1) which is capacitively coupled, with excitation-source function, an electro-thermal evaporator (2) with rhodium filament for the evaporation of the liquid micro sample, provided with a teflon support (3), having a piston (4) for extracting the liquid sample from its chamber, and a filament supply source (5), a radio-frequency generator (6), a micro spectrometer (7) with a detector, with coupled charge, for measuring the element emission signal, a computer unit (8) and an electronic flow-meter (9) meant to adjust the argon flow-rate coming from a gaseous-argon cylinder (10), as a plasma support.

7. **PATENT OSIM NR. RO133261 -B1 / 30.04.2020**

TITLE RO/EN: Panou compozit multistrat si procedeu de obtinere a acestuia / MULTILAYER COMPOSITE PANEL HAS TWO RIGID PLATE-TYPE LAYERS, MEDIAN LAYER WHICH CONSISTS OF SPECIFIC AMOUNT OF FLAX FIBERS AND, FOR REST, BINDER OF WHITE CEMENT AND WATER IN EQUAL RATIOS

INVENTOR(S): TAMAS-GAVREA DANIELA-ROXANA, ISTOAN RALUCA, TIUC ANCUTA ELENA

ABSTRACT: The multilayer composite panel has two rigid plate-type layers consisting of 14-14.5% perlite, 28.2-28.7% white cement, 14-14.5% lime and 42.4-42.9% water. The percentage is expressed by mass, reinforced with a net made of flax fibers. The median layer consists of 19-21% flax fibers and, for the rest, a binder of white cement and water in equal ratios. The panel has a thickness of 50 mm, a resistance to bending of 0.126 N/mm2, a resistance to compression of 0.013 N/mm2, a heat conductivity of 0.072 W/m and high sound-absorbing properties.

8. **PATENT OSIM NR. RO132234 -B1 / 30.03.2020**

TITLE RO/EN: Sistem robotic paralel pentru recuperarea medicala a membrului superior / ROBOT FAMILY FOR MEDICAL RECOVERY OF UPPER LIMB, HAS FRAMEWORK WITH ROTATIONAL COUPLINGS

INVENTOR(S): GHERMAN BOGDAN GEORGE, PISLA DOINA LIANA, PLITEA NICOLAE, VAIDA LIVIU CALIN, CARBONE GIUSEPPE, PISLA ADRIAN, BANICA ALEXANDRU VLAD

ABSTRACT: The invention relates to robots used for the medical recovery of the upper limb, namely for the recovery of the forearm flexion motion from the elbow, of pronation/supination, flexion/extension and abduction/adduction motion of the palm. According to the invention, the robots are located on a framework (1) which supports an active rotation coupling (2) and the fixed-coordinate system of the robot OXYZ, the coupling (2) having the rotation axis along the axis OY of the coordinate system, where the drive is achieved by means of a rotary motor (3), the motion q1 being performed by the rotation about the axis OY, thus the forearm flexion, a connection element (4) is positioned and fixed along the forearm up to the active rotation coupling (5) placed in the distal third of the forearm, and driven by a rotary motor (6) thereby achieving the pronation/supination motion by the motion q2, namely rotation about the axis Ox1, and the same rotation coupling (5) driven by the motor (9) positions the connection element (7) which supports the active rotation coupling (8) with the role of performing the adduction/abduction motion of the palm by the motion q3, namely the rotation about the axis O2z2, and an element (10) supports the active rotation coupling (11) which, by means of the element (13) and socket (14) and driven by the rotary motor (12), leads to the flexion/extension motion of the hand, by the motion q4, namely by rotation about the axis O3z3.

9. **PATENT OSIM NR. RO132233 -B1 / 30.03.2020**

TITLE RO/EN: Robot sferic pentru recuperarea medicala a zonei proximale la nivelul membrului superior / SPHERICAL ROBOT FOR MEDICAL RECOVERY OF UPPER LIMB PROXIMAL AREA, HAS ACTIVE COUPLINGS AND SPHERICAL MECHANISM

INVENTOR(S): VAIDA LIVIU CALIN, PLITEA NICOLAE, PISLA DOINA LIANA, CARBONE GIUSEPPE, GHERMAN BOGDAN GEORGE, ULINICI IONUT-MIHAI, PISLA ADRIAN

ABSTRACT: The invention relates to spherical robot system for the medical recovery of the upper limb proximal area, having three active couplings with a view to reproducing the abduction and flexion of the shoulder in horizontal and vertical plane, respectively, and reproducing the pronation of the forearm in vertical plane. According to the invention, the robot is a mechanism with three degrees of mobility, in modular construction, consisting of a spherical mechanism with two degrees of mobility which reproduces the movements on the surface of a sphere in the vertical plane YOZ and horizontal plane XOY, the two movements achieving the mobilization of the shoulder joint, where the gearmotor (1) transmits the rotary motion, from the level of the active coupling q1, by means of the rod (2), towards the guiding profile (3) which, in its turn, transmits the motion to the guide slide (4), said slide performing a translation motion in the plane YOZ by sliding on the guide (5), reproducing the flexion/extension of the shoulder, and the gearmotor (6) also transmits a rotation motion, from the level of the active coupling q2, by means of the rod (7), towards the guiding profile (5) and the rod (2) as shoulder supporting element, such that the guide (5) makes guide slide (4) slide in the plane XOY, together with the support (8) of the arm, the support (9) of the forearm and the support (10) of the hand, consequently on the guide (3) there being reproduced the abduction/adduction of the shoulder, and a mechanism with one degree of freedom, which reproduces a rotational motion about the axis Y in the plane XOZ for which the gearmotor (11) transmits a rotation motion, from the level of the active coupling q3 to the toothed gear (12), which, by means of some rods (13), transmits the rotation about the axis Y to the atachment elements/ the support (9) of the forearm and the support (10) of the hand, thus reproducing the pronation/supination of the forearm.

10. **PATENT OSIM NR. RO131721 -B1 / 30.03.2020**

TITLE RO/EN: Masina sincrona cu reluctanta variabila in constructie modulara, pentru propulsia bicicletelor electrice / SYNCHRONOUS MACHINE WITH VARIABLE RELUCTANCE, IN MODULAR CONSTRUCTION, FOR ELECTRIC BICYCLE DRIVE

INVENTOR(S): JURCA FLORIN NICOLAE, INTE RAZVAN ALEXANDRU

ABSTRACT: The invention relates to an electric machine meant for electric bicycle drive. According to the invention, the electric machine, consisting of a stator and a modular rotor, comprises some exterior covers (1), some rotor modules (2) among which non-magnetic separation elements (6, 7, 8) are placed, and which are made of some magnetic elements (3, 4, 5) made of sheets, which close the magnetic field path within the electric machine rotor and ensure the assembling of the wheel spokes (10, 11, 12) fixed with a spring lock (13) and the stator consists of a magnetic core (14) and a three-phase winding (15), the rotor construction on axial and transverse direction allowing a variation of the machine reluctance as well as simple and fast maintenance operations.

11. **PATENT OSIM NR. RO130186 -B1 / 28.02.2020**

TITLE RO/EN: Analizor miniatural de mercur utilizand spectometria de emisie optica / MINIATURIZED MERCURY ANALYZER BASED ON OPTICAL EMISSION SPECTROMETRY IN CAPACITIVELY COUPLED PLASMA MICRO-TORCH AND GOLD FILAMENT MICRO-COLLECTOR

INVENTOR(S): FRENTIU TIBERIU, PONTA MIHAELA-LUCIA, DARVASI EIUGEN, MIHALTAN IRONIM-ALIN, MATHE ALEXANDRU, CADAR SERGIU IULIAN, SENILA MARIN, FRENTIU MARIA, PETREUS DORIN-MARIUS, ETZ RADU, PUSKAS FERENC, SULEA DORIN

ABSTRACT: The invention relates to a miniaturized mercury analyzer based on optical emission spectrometry in capacitively coupled plasma micro-torch and gold filament micro-collector used as analytical instrumentation. According to the invention, the analyzer consists of a capacitively coupled plasma micro-torch (1) with the role of excitation cell, a gold filament micro-collector (2) for concentrating the mercury vapours, a source (3) for supplying the micro-collector (2), a radiofrequency generator (4), a micro-spectrometer (5) with coupled load detector for measuring the mercury emission signal, a computing unit (6), a three-channel peristaltic pump (7), a cold vapour generator (8), some recipients (9, 10, 11 and 12) for the sample, for stannous chloride, for washing solution and for residue collecting and an electronic flowmeter (13) for argon.

12. **PATENT OSIM NR. RO130512 -B1 / 30.01.2020**

TITLE RO/EN: Dispozitiv de stergere a suprafetei sarmei de otel, dupa zincare / DEVICE FOR WIPING-OFF STEEL WIRES SURFACE AFTER ZINC-COATING

INVENTOR(S): TINTELECAN MARIUS

ABSTRACT: The invention relates to a device for wiping-off the surface of steel wire after thermal zinc-coating thereof in order to remove the excess zinc and prevent the formation of dull iron-zinc phases, which insures a high gloss coated layer. According to the invention, the device is mounted at a distance of 10 mm, at the most, from the surface of the molten zinc bath (1) and consists of a cylindrical body (6) through which cooling water circulates, on said body there being mounted by screwing another system (4) through which the wire passes, inside which a set (5) of wiping-off pads is placed, the excess zinc being removed by ensuring a certain screwing degree between the body (6) and the said system.

13. **PATENT EPO NR. EP3300462-B1 / 11.12.2019**

TITLE RO/EN: Structura de condensatoare pentru circuit de curent continuu / CAPACITOR DIRECT CURRENT (DC)-LINK ARRANGEMENT FOR HIGH CURRENT RIPPLE APPLICATIONS, HAS CERAMIC CAPACITOR ELEMENTS THAT ARE ARRANGED AND CONNECTED IN SIMILAR CURRENT PATH AND IN PARTICULAR IN SAME RESISTANCE CURRENT PATH

INVENTOR(S): TEODOSESCU PETRE DOREL, VINTILOIU IOANA, POP ADRIAN CORNEL, RUSU TIBERIU, POP-PIGLESAN FLORIN-ADELIN, DARAMUS MIHAI-ALEXANDRU

ABSTRACT: The arrangement (1) has a first terminal (2) and a second terminal (3) that are arranged on a printed circuit board (PCB) based substrate (5) Several ceramic capacitor elements (4) are connected to the first terminal and the second terminal. The ceramic capacitor elements are arranged and connected in a similar current path and in particular in the same resistance current path. The first terminal and the second terminal are split into a first path (7,7') and a second path (8,8') to form a portion of a corresponding contact area (6,6'). USE - Capacitor direct current (DC)-link arrangement for high current ripple applications, power conversion systems and electronic converters. ADVANTAGE - The mechanical properties of the capacitor DC-link arrangement are significantly improved. The capacitor portion damages are prevented or significantly reduced due to application in high vibration environments. The load symmetry of the ceramic capacitor elements is achieved. The cracking vibration immunity of the capacitor bank is achieved by special arrangement of the ceramic capacitor elements together with placing of the strengthening bus bars on the positive and negative copper paths.

14. **PATENT OSIM NR. RO128582 -B1 / 29.11.2019**

TITLE RO/EN: Dispozitiv pentru conversia zgomotului in energie electrica / DEVICE FOR CONVERSION OF NOISE TO ELECTRIC ENERGY CONSISTS OF A SUPPORT WHICH SUPPORTS A COLLECTING MATRIX, WITH SOME ELECTROMAGNETIC AND PIEZOELECTRIC TRANSDUCERS

INVENTOR(S): FILIP NICOLAE

ABSTRACT: The invention relates to an acoustic-electric device meant to collect the environmental noise made by the road traffic or by various technological equipments and to convert the same into low-power electric energy. According to the invention, the said device consists of a support (1) which supports a collecting matrix (2), with some electromagnetic and piezoelectric transducers (3), which convert the acoustic energy into electric signals, which are collected by means of some connections (4) and a multichannel system (5) to an accumulator (6), or to a consumer; the collecting matrix (2) comprisimg 11 transducers (3), each being provided with a convergence element (7), geometrically differentiated depending on the central frequency.

15. **PATENT OSIM NR. RO131458 -B1 / 30.10.2019**

TITLE RO/EN: Sistem de amplificare pentru presiuni inalte / AMPLIFICATION SYSTEM FOR HIGH PRESSURES consists a sonic generator (1) comprising a shaft

INVENTOR(S): CIUPAN CORNEL, CIUPAN EMILIA, PETRUS RARES ADRIAN

ABSTRACT: The invention relates to an amplification system for high pressures, which can be used in the construction of water-jet cutting machines or in other industrial applications requiring high pressures. According to the invention, the system consists of the following components: a. a sonic generator (1) comprising a shaft (4) with a cam or an eccentric (5) which, by a rod (6), actuates a membrane (7) of a membrane chamber (8), the membrane (7) being fixed with some screws (11), between a lower casing (9) and an upper casing (10); b. a sonic amplifier (3) made of a membrane chamber (12) having the membrane (13) coupled, by a rod (14), to a membrane (15) of a membrane chamber (16), where the membrane (13) is fixed by screws (17) between an upper casing (18) and a lower casing (19), the membrane (15) is fixed between the lower casing (19) of the chamber (12) and the casing (20) of the membrane chamber (16), by some screws (21), generating pressure waves in a liquid-containing flexible pipe (2) made of insertion rubber, or a rigid pipe made of metal, the pressure waves generating a reciprocating motion of the membrane (13), the connecting rod (14) generating the reciprocating motion of the membrane (15), the membrane chamber (16) together with the supply valve (22) and a nozzle (23) mounted on an orifice (24), by means of a threaded bush (25), making up the high-pressure pump (26) which generates the pulsating jet whose frequency is equal with the frequency of the pressure waves within the pipe (2); the pressure amplification is achieved due to the fact that the membrane (13) has a diameter (D) larger than the diameter (d) of the membrane (15), the pressure amplifying ratio being given by the square of the ratio between the diameters (D/d)2.

16. **PATENT OSIM NR. RO130017 -B1 / 30.09.2019**

TITLE RO/EN: Dispozitiv optico-electric cu marcaje fiduciale pentru interfatarea cu sisteme tactile optice multi-punct / OPTO-ELECTRICAL DEVICE WITH FIDUCIAL MARKS FOR INTERFACING WITH MULTI-POINT TOUCH OPTICAL SYSTEM

INVENTOR(S): CRISAN SEPTIMIU

ABSTRACT: The invention relates to an opto-electrical device with fiducial marks meant for man-machine interfacing in multi-user multi-point touch systems carried out with optical methods and which have characteristics and behaviours similar to the real objects generally found on the frontal panel of an apparatus, such as press buttons, displays, control elements. According to the invention, the device comprises a mechanical support (1) adapted to the size of a human hand, which comprises a matrix (2) of visible or infrared punctiform sources, supplied from a mobile voltage source (3), a guiding grid (4) which together with the matrix (2) allows the

manufacture of optical marks, a series of slots (5) for detecting the incident light radiation, a photoelectric transducer assembly (6) which detects the light radiation and controls the selective switching on of the sources forming a fiducial mark, a pressure sensor (7) which permits the decrease of the energy consumption and the detection of the interaction between the user and the device, a switch (8) for starting the device and a plate (9) for diminishing parasite reflections.

17. **PATENT OSIM NR. RO129923 -B1 / 30.08.2019**

TITLE RO/EN: Modul de orientare cu structura modulara cu mai multe curburi / MODULE OF ORIENTATION WITH MODULAR STRUCTURE, HAVING VARIOUS CURVATURES, INTERMEDIATE ELEMENT AND ELEMENT FOR CHANGING CURVATURE

INVENTOR(S): VAIDA LIVIU CALIN, PLITEA NICOLAE, PISLA DOINA LIANA, GHERMAN BOGDAN GEORGE, SUCIU MARIUS CRISTIAN

ABSTRACT: The invention relates to a module of orientation of the distal end of a surgical instrument. According to the invention, the module comprises a plurality of elements (1a, 1b and 1c), i.e. an end element, an intermediate element and an element for changing the curvature, which allow the carrying out of some structures of orientation having various curvatures that can have various inclination angles determined by the number of intermediate elements (1b) and by the value of an angle, with the possibility of obtaining several curvatures whose orientation in relation to one another is defined by the value of an angle and which can have various diameters (d) and lengths (L).

18. **PATENT OSIM NR. RO128979 -B1 / 30.07.2019**

TITLE RO/EN: Procedeu si instalatie de separare electrostatica a unui amestec de materiale granulare neconductoare / PROCESS AND INSTALLATION FOR ELECTROSTATICALLY SEPARATING A MIXTURE OF NON-CONDUCTIVE GRANULAR MATERIALS

INVENTOR(S): SAMUILA ADRIAN PAUN, BILICI MIHAI-ALEXANDRU, IUGA ALEXANDRU-IULIU, DASCALESCU LUCIAN DORUCALIN FLORENTIN LAUR

ABSTRACT: The invention relates to a process and an installation for electrostatically separating the components of a mixture of non-conductive granular materials, such as: wastes of plastic, mineral substances and others. According to the invention, the process consists in: introducing, with an adjustable supplying flow rate, a mixture comprising non-conductive granules of various types, into a triboelectrization region, electrically charging with contrary sign charge the two components the granular mixture consists of, by triboelectrization in fluidized bed, separating the non-conductive granules of the first type from those of the second type by displacing them in opposed directions, under the action of some forces exercised by an electrostatic field, fastening the granules of the first type on the surface of a non-conductive rotating cylinder and those of the second type on another non-conductive rotating cylinder, extracting, from the triboelectrization area, the electrically charged granules which are fastened on the two cylinders, by rotating the same in opposite directions, detaching the granules from the surface of the two cylinders, under the action of the weight force or by means of some cleaning brushes and collecting them as products of the separation process and discharging, from the triboelectrization area, the mixture of the granules which cannot be separated. As claimed by the invention, the installation comprises an air chamber (10) made of some identical modules (11) for dividing and configuring the fluidized bed, an area (1) for triboelectrization in fluidized bed common with an area of electrostatic field generated by two electrodes (3 and 4) each connected to a high voltage source (5 and 6) of positive and negative polarity, respectively, two non-conductive rotating cylinders (7 and 8) associated to the two electrodes (3 and 4), two brushes (9) providing the granule detachment from the rotating cylinders (7 and 8), two granule collectors (15) and a third collector (16) of insufficiently electrized granules.

19. **PATENT OSIM NR. RO131169 -B1 / 28.06.2019**

TITLE RO/EN: Dispozitiv electronic pentriu sisteme de iluminat cu LED / ELECTRONIC DEVICE FOR LED LIGHTING SYSTEMS

INVENTOR(S): TEODOSESCU PETRE DOREL, SABAU MADALINA SABINA, NORBERTY CSABA SZEKELY, BOJAN MIRCEA, MARSCHALKO RICHARD

ABSTRACT: The invention relates to an electronic device for controlling light emitting diodes - LED used in lighting systems. According to the invention, the device comprising a single electric energy conversion stage, without rectifier circuit on the input side, consists of an input filter (1), an alternating current converter (2), which consists of a capacitive divider (6) and a half-bridge electronic circuit (7) comprising two bidirectional electronic devices (8), enabling the direct connection to an alternating voltage source and the generation, at the output, of high frequency alternating voltage signals, which supply a resonance circuit LC (3), a LED load (4) and a control circuit (5) generating control signals for the converter (2).

20. **PATENT OSIM NR. RO128666-B1 / 29.11.2018**

TITLE RO/EN: Traductor electronic analogic pentru masurarea puterii in curent continuu / ANALOGUE ELECTRONIC TRANSDUCER FOR MEASURING POWER IN DIRECT CURRENT CIRCUITS, HAS CIRCUIT FOR GENERATING FILLING FACTOR WHICH IS ASTABLE FLIP-FLOP CIRCUIT BASED ON AMPLIFIER

INVENTOR(S): MUNTEANU RADU ADRIAN, DULF EVA HENRIETTA, FESTILA CLEMENT, MUNTEANU RADU, TODORAN GHEORGHE-ION

ABSTRACT: The invention relates to an analogue electronic transducer used for measuring power in direct current circuits. According to the invention, the transducer consists of a circuit for generating the filling factor which is an astable flip-flop circuit based on an amplifier (A2) with positive reaction through two resistors (R1 and R2) but also with negative reaction through two diodes (d1 and d2), two equivalent controlled resistors (r1 and r2) and a capacitor (C), the equivalent resistors (r1 and r2) corresponding to some bipolar transistors from two oppositely-connected optocouplers, the output voltage of the differential amplifier (A2) controlling, in synchronism, two electronic switches (K1 and K2) connected with two low-pass filters (FTJ-1 and FTJ-2) which have the role of smoothing the rectangular waves generated by the switches (K1 and K2) and an amplifier (A1) which controls the current of the diodes (d1 and d2).

21. **PATENT OSIM NR. RO131325-B1 / 30.10.2018**

TITLE RO/EN: Metoda chimica de obtinere a filmelor epitaxiale de manganit de lantan dopat cu strontiu La0.66Sr0.33MnO3 (LSMO) / CHEMICAL METHOD FOR PREPARING EPITAXIAL FILMS OF STRONTIUM-DOPED LANTHANUM MANGANITE La0.66Sr0.33MnO3 (LSMO)

INVENTOR(S): NASUI MIRCEA, PETRISOR TRAIAN, MOS RAMONA BIANCA, MESAROS AMALIA, GABOR MIHAI SEBASTIAN, CIONTEA LELIA, PETRISOR TRAIAN

ABSTRACT: The invention relates to a chemical method for preparing epitaxial films of strontium-doped lanthanum manganite La0.66Sr0.33MnO3, meant to be used in magnetic field sensors. According to the invention, the method consists in preparing a precursor solution by mixing metal sources, such as lanthanum acetylacetonates, manganese and strontium acetate which are separately dissolved in propionic acid, the resulting precursor solution being then concentrated by vacuum distillation, up to a concentration of 1...2 M, after which it is deposited by centrifugation onto SrTiO3 monocrystalline substrates, at rotary speeds of 4000 rpm, for 60 s, the raw films being further subjected to a one-stage heat treatment, in air, at a heating rate of 5 degrees C/min, up to the temperature of 500 degrees C and a heating rate of 10 degrees C/min, up to the temperature of 1100 degrees C, they being maintained at this temperature for 2 h, after which they are cooled down to the ambient temperature at a rate of 10 degrees C/min, the resulting films exhibiting an advanced orientation degree.

22. **PATENT OSIM NR. RO131110-B1 / 28.09.2018**

TITLE RO/EN: Sistem janta cu motor electric incorporat pentru vehicule electrice / RIM WITH BUILT-IN ELECTRIC MOTOR SYSTEM FOR ELECTRIC VEHICLES

INVENTOR(S): JURCA FLORIN NICOLAE, RUBA MIRCEA

ABSTRACT: The invention relates to a system comprising a rim with built-in electric motor meant for electric vehicle propulsion. According to the invention, the system consists of two main elements: a rim and an electric motor, the rim consisting of an outer ring (1) made of non-magnetic materials, on which the tire is fixed, some outer covers (2), also made of non-magnetic materials, an inner disk (3) which has a double role: of fixing some modular rings (4 and 5), i.e. exterior and interior, respectively, and of fixing the system on the vehicle, the modular rings (4 and 5) providing, in their turn, the attachment of the motor magnetic cores made of modular elements (6 and 7), the electric motor being a motor with switched reluctance, in reversed construction, consisting of a rotor (8) made of electrotechnical-grade steel sheets in modular shape, and of a stator (10) made of modular magnetic poles also made of steel sheets, on which the electric circuit made of coils (12) wound about the salient poles is placed.

23. **PATENT OSIM NR. RO131166-B1/ 30.08.2018**

TITLE RO/EN: Actuator electromecanic cu dispozitiv electronic de comanda / ELECTRO MECHANICAL ACTUATOR WITH ELECTRONIC CONTROL DEVICE, MEANT FOR ROTARY ACTUATION OF ANY ELEMENT OR EQUIPMENT WHICH NEEDS MAXIMUM ANGULAR ROTATION

INVENTOR(S): BREBAN STEFAN, TEODOSESCU PETRE DOREL, NEAG ADRIANA VOICA, CHIRCA MIHAI

ABSTRACT: The invention relates to an electro-mechanical actuator with electronic control device meant for rotary actuation of any element or equipment which needs a maximum angular rotation of 180 degrees. According to the invention, the actuator consists of a rotor having one or more permanent magnets (9) with radial magnetization, mounted by means of a bush (18) clamping or adhered onto an axle (8) which is mounted on two bearings (7) each of them integrated into a plate (5, 6) of a material of high magnetic permeability, of windings (3) which are placed about some statoric poles (2), which are located on either side of the magnet/magnets (9) on the rotor and are mounted on some supports (4) of a high permeability material, fixed on the ends of the plates (5, 6) to form together a rigid assembly, of a circular torsion spring (16) mounted about the axle (8) of the rotor, the spring (16) having one end fixed on one of the plates (5, 6) and the other end fixed, through a connection element (13) to the axle (8) of the rotor, and of an electronic device which provides the winding supply and, implicitly, the rotor movement between two standing positions.

24. **PATENT OSIM NR. RO127032-B1 / 30.05.2018**

TITLE RO/EN: Dispozitiv de pornire la rece a motoarelor cu ardere interna alimentate cu biodisel / COLD START DEVICE FOR INTERNAL COMBUSTION ENGINES SUPPLIED WITH BIODIESEL FUEL

INVENTOR(S): MARIASIU FLORIN EMIL, BURNETE NICOLAE, VARGA BOGDAN OVIDIU

ABSTRACT: The invention relates to a cold start device for an internal combustion engine supplied with biodiesel fuel. According to the invention, the device has a system (1) for emitting ultrasounds (2) that are transmitted by means of an emitter (3) directly into the biocombustible mass from a filtration battery, thereby producing an increase of the temperature thereof, the system (1) for emitting the ultrasounds (2) being controlled by means of a control module (4) depending on the temperature necessary to obtain the optimal physical parameters (viscosity, density) of the biofuel, the temperature being measured by a sensor (7) placed on the case (5) of the filtration battery.

25. **PATENT OSIM NR. RO127277-B1 / 30.05.2018**

TITLE RO/EN: Metoda de generare a structurilor cinematice pentru roboti paraleli, si structura reconfigurabila obtinuta / MODULES FOR RECONFIGURATION OF PARALLEL ROBOTS, HAVE PAIR OF COMBINATIONS OF LINKAGES, LINKAGE HAS SPHERICAL JOINT, PRISM-SHAPED JOINT AND UNIVERSAL JOINT

INVENTOR(S): BRISAN CORNEL

ABSTRACT: The invention relates to a method for obtaining, by reconfiguration, a system of parallel robots having various mobility degrees and to some modules necessary for such a reconfiguration, respectively. According to the invention, the method consists, in a first stage, in selecting the number of mobility degrees (M) of a robot, then selecting the number (b) of linkages of PSR type so that, finally, a number (a) of linkages of PSU type results based on the relation M=a+b, the reconfigurability of the structures being ensured by using the same mounting dimensions between the connection elements of some kinematic couples. The modules claimed by the invention have two combinations of linkages: a linkage (SPU) comprising three joints (1, 2 and 3), namely a spherical joint, a prism-shaped joint and a universal joint, and a linkage (SPR) comprising three joints (4, 5 and 6), namely a shperical joint, a prism-shaped joint and a rotation joint, where a reconfigurable joint can integrate only SPR linkages, only PSU linkages or combinations of PSR and PSU linkages, the linkages of the same type in a structure being identical.

26. **PATENT OSIM NR. RO128489-B1 / 27.04.2018**

TITLE RO/EN: Dispozitiv de sedimentare pentru obtinerea unor materiale poroase, sinterizate, graduale / PROCESS AND DEVICE FOR PREPARING SINTERED MATERIALS OF GRADUAL POROUS STRUCTURE BY GRAVITATIONAL SETTLING OF POWDERS

INVENTOR(S): VIDA-SIMITI IOAN, THALMAIER GYORGY, MOLDOVAN VALENTIN, SECHEL ARGENTINA NICULINA, NASCA OVIDIU

ABSTRACT: The invention relates to a process and a device for preparing sintered materials of gradual porosity by gravitational settling of powders, intended to be used as filtering elements or porous membranes for various industrial and medical applications. According to the invention, the process consists in previously dispersing the metallic powder mass into distilled water, after which it is poured into the settling enclosure (2) containing distilled water and a dispergation agent, the settling taking place inside a mould (6), then the settled material is dried in an oven, for 1 h, at a temperature of 110 degrees C, and sintered in sintering furnaces at technological parameters depending on the nature of the sintered material and the desired sintering degree. The device, as claimed by the invention, consists of four settling enclosures in the form of glass columns (2) which are fixed and sealed between the lower cap (3) and the upper cap (4), and four moulds (6) with water draining orifices.

27. **PATENT OSIM NR. RO130282-B1 / 30.03.2018**

TITLE RO/EN: Metoda pentru modificarea dinamica a frecventei intr-o unitate aritmetica bazata pe detectia on-line a erorilor / METHOD FOR DYNAMICALLY MODIFYING FREQUENCY IN AN ARITHMETIC UNIT BASED ON ONLINE ERROR DETECTION

INVENTOR(S): JOAN FIGUERAS PAMIES, MICLEA LIVIU CRISTIAN, MOIS GEORGE DAN

ABSTRACT: The invention relates to a method for dynamically modifying the frequency during the operation of an arithmetic unit within a digital signal processing unit which has adders or multipliers comprised in the critical path. According to the invention, the method consists in dynamically modifying the frequency by the dynamic modification of the clock signal period in an arithmetic circuit (1), based on the detection of the errors due to the delays occurred in the circuit, by a detection contention circuit, using a base 7 residual code.

28. **PATENT OSIM NR. RO128900-B1 / 28.02.2018**

TITLE RO/EN: Dispozitiv de atenuare a vibratiilor, atasat pe sistemul mana-brat al operatorului uman / DEVICE FOR DAMPING THE VIBRATIONS, ATTACHED TO THE HAND-ARM SYSTEM OF THE HUMAN OPERATOR

INVENTOR(S): POP AURORA FELICIA, ARGHIR MARIANA

ABSTRACT: The invention relates to a device for damping the vibrations, attached to the hand-arm system of the human operator. The device claimed by the invention consists of a support plate (3) which sustains a rubber sleeve (2) consisting of two parts secured at the ends with two screws (1), the plate (3) having the role of securing to the forearm, a vibration damper (6) secured between the plate (3) and another support plate (7) secured in another sleeve (9) by means of a screw (8), the vibration damper (6) being secured with an end to the plate (3) by means of a countersunk screw (4), and at the opposite end it is secured to the plate (7) by means of a support extender (5) which is welded to the plate (7).

29. **PATENT OSIM NR. RO128681-B1 / 30.01.2018**

TITLE RO/EN: Amplificator de impulsuri bipolare de curent in punte hibrida cu comanda simetrica / BIPOLAR CURRENT PULSE AMPLIFIER IN HYBRID BRIDGE WITH SYMMETRICAL CONTROL

INVENTOR(S): ARSINTE RADU, PETREUS DORIN- MARIUS

ABSTRACT: The invention relates to a bipolar current pulse amplifier in hybrid bridge with symmetrical control. According to the invention, the amplifier has a bridge structure consisting of four switch elements (Q1, Q2, Q5, Q6) and some circuits related thereto and it is meant to supply current pulses on an inductive load (L), two of the bridge sides, comprising switch elements (Q1 and Q5), are replaced with some linear current sources made by some high speed operational amplifiers (X1 and X2), some resistors (R5 and R12) being used for detecting the current of those sources and providing the current reaction, and some resistors (R6 and R13) providing the factor for amplifying in current, a voltage comparator made by some transistors (Q3 and Q4) and some additional elements (R15, R16 and R17) provide the control of the switch elements (Q2 and Q6) in the bridge, some elements (R3, R4, C2 and R11, R10, C4, respectively) are used for controlling the power switches (Q2 and Q6, respectively), in the bridge, and some diodes (D1, D2, D3 and D4) are used for suppressing the energy appearing during the switching process, the sense of the current in a load (L1) being set out by the transistors (Q3 and Q4) which are used for comparing the voltages at the output of the amplifiers (X1 and X2) and decide the activation of one of the two switches (Q2 or Q6).

30. **PATENT OSIM NR. RO127341-B1 / 30.01.2018**

TITLE RO/EN: Metoda si arhitectura hardware pentru adresarea automata a imaginilor microarray / METHOD AND HARDWARE ARCHITECTURE FOR AUTOMATIC MICROARRAY IMAGE ADDRESSING

INVENTOR(S): BELEAN IOAN BOGDAN, BORDA MONICA ELENA, TEREBES ROMULUS, MALUTAN RAUL EMIL

ABSTRACT: The invention relates to a method and hardware architecture for automatic microarray image addressing. The claimed method consists in determining a horizontal profile and a vertical profile of the image, applying a shock filter model and determining some points of inflection and tracing some pairs of horizontal and vertical lines allowing the selection and location of spots, eliminating the necessity of a workstation and a specialized software platform. The claimed hardware architecture consists in storing the horizontal and vertical profiles of the microarray image in a block RAM memory (8) using two information displacement registers (10 and 11) and a parallel processing block with two output registers (14 and 15) and dividing the profile data structure into blocks of size n, the same as the size of displacement registers (10 and 11), for uploading the data in the memory (8) into the displacement registers (10 and 11), passing and processing thereof by output registers (14 and 15) and storing the results in a RAM memory (9).

31. **PATENT OSIM NR. RO 128372-B1 / 29.11.2017**

TITLE RO/EN: Instalatie cu agitare pentru bioextractia metalelor grele din solurile poluate / INSTALLATION WITH STIRRING BY SWINGING FOR HEAVY METALS BIO-EXTRACTION FROM POLLUTED SOILS

INVENTOR(S): CIOCIORHAN CAMELIA SIMONA, MICLE VALER, ARDELEAN IOAN

ABSTRACT: The invention relates to an installation for extracting heavy metals from polluted soils. According to the invention, the installation consists of a cylindrical tank (7) supported on two rolling bearings and driven into a swinging-type oscillation movement, by means of a crank-equalizer-like quadrangle mechanism (2, 3, 4, 5, 6), a vat (8) with water, a gearmotor (1) and a system (10) for heating and temperature control, which, by means of a resistor of 1000 W connected in circuit with a microprocessor-plate, determines and maintains a temperature of 50 degrees C in the vat and of 35 degrees C in the cylinder.

32. **PATENT OSIM NR. RO 129834-B1 / 30.10.2017**

TITLE RO/EN: Procedeu de obtinere a unui material compozit de frictiune cu baza fier / METHOD FOR OBTAINING IRON-BASED FRICTION COMPOSITE, E.G. FOR BRAKE PADS, INVOLVES SCREENING IRON, COPPER AND TITANIUM DIOXIDE POWDERS WITH PARTICLE SIZE LESS THAN 10 MICROMETERS, HOMOGENIZING BY GRINDING, COMPRESSING IN MOLD AND SINTERING

INVENTOR(S): MERIE VIOLETA VALENTINA, CANDEA VIOREL CONSTANTIN, POPA CATALIN OVIDIU, POPA ANGELA ENUTA

ABSTRACT: The invention relates to a process for obtaining an iron-based friction composite material intended for car brake pads or other industrial friction applications. The process according to the invention starts by screening the iron, copper and titanium dioxide powders having a particle size of less than 10 microns, after which the powder mixture dosed according to the formula is homogenized by mechanical grinding for 15 minutes in a planetary ball mill having a plate rotary speed of 1000 rpm and a container rotary speed of 500 rpm. The homogenized mixture is then compressed biaxially in a closed mold, using a compacting pressure of 600 MPa and in the final stage the raw pressed pieces are sintered under vacuum, at a pressure of 10-5 torr, at a sintering temperature of 1050 degrees C maintained for 30 minutes.

33. **PATENT OSIM NR. RO129163-B1 / 30.10.2017**

TITLE RO/EN: Material compozit de frictiune cu baza fier / IRON-BASED COMPOSITE FRICTION MATERIAL CONTAINS IRON, COPPER, GRAPHITE AND NICKEL

INVENTOR(S): CANDEA VIOREL CONSTANTIN, MERIE VIOLETA VALENTINA, POPA CATALIN OVIDIU, POPA ANGELA ENUTA

ABSTRACT: The invention relates to a composite material made of a Fe-based metal matrix reinforced with ceramic particles, the material being meant to be employed in manufacturing friction pads for cars or in industrial friction applications due to its increased wearing resistance, and average friction coefficient, while the mechanical and tribological properties are maintained constant at high temperatures specific to the operation of friction products. According to the invention, the material has the following composition: 63% Fe, 10% Cu, 7% graphite, 12% Ni, 6% TiO2 and 2 % alumina, the percentage being expressed by weight.

34. PATENT OSIM NR. RO127453-B1 / 30.08.2017

TITLE RO/EN: Sistem de control al traficului vehiculelor pe o banda, si metoda de exploatare / METHOD AND SYSTEM FOR CONTROLLING TRAFFIC OF ROAD VEHICLES ON ONE LANE BY LIMITING ADMISSIBLE MAXIMAL SPEED ON ONE LANE

INVENTOR(S): LETIA TIBERIU STEFAN, CIUPAN CORNEL

ABSTRACT: The invention relates to a method and a system for controlling the traffic of road vehicles on one lane. The claimed method consists in limiting the admissible maximal speed on one lane, when the speed of the vehicle entering the controlled section is higher than the admissible maximal speed by commanding to a mechanical system the application of an obstacle and the emission of some warning signals, and then the flow of cars on one lane is subjected to a control by limiting the number of vehicles passing through the control section by using the traffic lights in parallel with the obstacle and, in order to control the flows of vehicles on two adjacent lanes to be joined in a single lane, there are used two mechanical systems and two traffic lights, one for each lane, and there is permitted the access of vehicles in an equitable manner given by a ratio of the flows on each lane, said ratio being determined by means of a system which determines the time of passage between two cars for each lane. The claimed system comprises a control equipment (11) and a mechanical system which imposes an obstacle made either by means of an asymmetrical cylinder (6) mounted in a channel (5) which is cut in a control section crosswise on a lane (2), said cylinder (6) being rotated by a motor (8) and producing or cancelling a dislevelment (7), or by means of a hydraulic device (29) actuating an obstacle in the shape of a trap mounted on the lane in the control section.

35. PATENT OSIM NR. RO128055-B1 / 28.07.2017

TITLE RO/EN: Dispozitiv si metoda de testare a dintilor rotilor dintate asimetrice / DEVICE FOR TESTING TEETH OF ASYMMETRIC GEAR WHEELS, COMPRISES BASE PLATE, TEST SPECIMEN SUPPORT, FASTENING YOKE, TEST SPECIMEN, RACK SUPPORT AND RACK

INVENTOR(S): LOBONTIU MIRCEA, RAVAI NAGY SANDOR

ABSTRACT: The invention relates to a device and a method for testing the teeth of asymmetric gear wheels, intended to be employed in determining the maximal load force of a tooth of asymmetric gear wheel under static conditions in the stage of designing the gear wheel in the assembly of a reduction unit. According to the invention, the device is mounted on a materials testing machine (8) and comprises a base plate (1), a test specimen support (5), a fastening yoke (6), a test specimen (4), a rack support (2) and a rack (3). The teeth testing method, as claimed by the invention, has the following stages: manufacturing the test specimen (4), placing the device (7) into the materials testing machine (8), placing the test specimen (4) in the support (5), driving the device (7) for applying a stress on the tooth, measuring the variation of the tangential testing force Fta and of the tooth deformation up to the moment of the breaking thereof, removing the used test specimen (4) from the device (7), removing the device (7) from the materials testing machine (8) and processing the obtained data.

36. PATENT OSIM NR. RO130450-B1 / 30.03.2017

TITLE RO/EN: Reductor magnetic cu raport de transmisie in trepte / MAGNETIC REDUCTION GEAR WITH STEPPED TRANSMISSION RATIO USED FOR TRANSFERRING TORQUE AND ROTARY SPEED OF A ROTATING ELECTRICAL MACHINE

INVENTOR(S): FODOREAN DANIEL

ABSTRACT: The invention relates to a magnetic reduction gear with stepped transmission ratio used for transferring torque and rotary speed of a rotating three phase electrical machine towards a certain consummer. According to the invention, the reduction gear comprises an inner rotor, consisting of : ferromagnetic core (1) of electrotechnic-grade steel sheets and permanent magnets (2) made of rare earth, an inner air gap (3), a fixed part, consisting of some ferromagnetic teeth (4) of level L1 made of electrotechnic-grade steel, an air gap (5) being provided between the ferromagnetic teeth (4) and an envelope (6) of non-magnetic material whose length exceeds the length of the active part of the reduction gear and is used for guiding some supplemental teeth (4) of level L2, L3 and L4 which will be inserted, upon necessities, into the air gap (5), an outer air gap (7) placed between the fixed part and the outer rotor of the magnetic reduction gear, an outer rotor consisting of : some permanent magnets (8) made of rare earth and ferromagnetic core (9) of electrotechnic-grade steel sheets and an outer mobile device of the reduction gear, consisting in its turn of the supplemental ferromagnetic teeth (4) of level L2, L3 and L4, the length of each level being different, the teeth being attached to some non-magnetic rings (10) which have different diameters, they are placed in different planes and are used for guiding the supplemental teeth (4) of level L2, L3 and L4 in the air gap (5) of the fixed part of the reduction gear.

37. PATENT OSIM NR. RO130062-B1 / 28.02.2017

TITLE RO/EN: Procedeu si material compozit pentru realizarea placilor sintetice ornamentale / PROCESS AND COMPOSITE MATERIAL FOR MANUFACTURING SYNTHETIC ORNAMENTAL PLATES

INVENTOR(S): SABAU EMILIA, BALC NICOLAE OCTAVIAN, BERE PETRU PAUL

ABSTRACT: The invention relates to a process for manufacturing synthetic ornamental plates to be used in constructions. According to the invention, the process consists in applying a usual stripping layer on a mould made of silicon rubber, after which a first mixture consisting of 60% polyester matrix and 40% calcium carbonate is poured so as to cover the height of the mould asperities and it is maintained until reaching the gel point at the room temperature, further on a reinforcing mixture comprising 30% sand, 30% minced wastes of glass fiber and 40% polyester matrix, mixed for 20 min. is poured and afterwards the mould, filled and leveled, is transferred into a polymerization oven where it is kept at the temperature of 60 degrees C for 2h, and, after the mould stripping, a compact composite material results.

38. **PATENT OSIM NR. RO130354-B1 / 30.12.2016**

TITLE RO/EN: Procedeu de obtinere a unei pulberi nanostructurate de tipul permalloy (supermalloy)/rhometal / NANOSTRUCTURED POWDER OF PERMALLOY (SUPERMALLOY) RHOMETAL TYPE AND PROCESS FOR PREPARING THE SAME

INVENTOR(S): CHICINAS IONEL, MARINCA TRAIAN FLORIN, POPA FLORIN, NEAMTU BOGDAN VIOREL

ABSTRACT: The invention relates to a composite nanocrystalline powder of pseudo "core-shell" type and to a process for preparing the same, the powder being meant to be used for manufacturing magnetic cores, with soft magnetic material properties and high electric resistivity, to operate in alternating current at medium frequencies. The claimed powder consists of composite particles which have a core of Permalloy type alloy - Ni3Fe or Supermalloy - 79Ni16Fe5Mo, as mass percentage, with nanocrystalline structure, and a quasi-continuous outer layer of fine Fe carbonyl particles bonded to the Permalloy particles by means of a specific thermal treatment, after which an interface 64Fe36Ni, as mass percentage, is formed between the core and the outer layer. The claimed process consists in preparing a mechanical mixture formed of nanocrystalline powder of Ni3Fe of large granulation and Fe carbonyl powder of small granulation, ranging between 6...9, with a mass ratio ranging between 92/8...60/40, the necessary amount of mixture being subjected to wet or dry homogenization, compacted at a pressure ranging between 300...600 MPa, followed by a thermal treatment in argon protected atmosphere, for one hour, at a temperature of 400...550 degrees C, and then the powder mixture is slightly ground in a mortar and screened through a sieve having a mesh size of 40.

39. **PATENT EPO NR. EP2869433-B1 / 21.09.2016**

TITLE RO/EN: Masina sincrona cu flux axial si magneti permanenti cu concentrare de flux magnetic / AXIAL FLUX PERMANENT MAGNET ELECTRICAL MACHINE FOR USE WITH E.G. WIND TURBINE, HAS STATOR OR ROTOR INCLUDING DISCRETE WINDINGS THAT ARE MOUNTED RADIALLY AT EQUAL DISTANCE, WITH HOLLOW SPACES AND ON INNER WINDINGS SUPPORT

INVENTOR(S): BREBAN STEFAN, MESTER VICTOR, OPREA CLAUDIU ALEXANDRU

ABSTRACT: The machine has a rotor arranged coaxial with a stator and mounted to allow rotation relative to the stator. One of the rotor and the stator includes permanent magnets (24) mounted radially with alternating NS-SN-NS circumferential magnetization and intercalated with magnetic poles (22). The stator or rotor includes discrete windings (10) that are mounted radially at equal distance, on a stator or rotor outer windings support, with hollow spaces and on an inner windings support. A mounting system comprises a retaining part and a clamping part.

40. **PATENT OSIM NR. RO128768-B1 / 30.06.2016**

TITLE RO/EN: Dispozitiv de reducere a vascozitatii uleiurilor de ungere, la pornirea, la temperaturi ambientale scazute, a motoarelor cu ardere interna / DEVICE FOR REDUCING LUBE OIL VISCOSITY UPON START OF INTERNAL COMBUSTION ENGINES AT REDUCED AMBIENT TEMPERATURES

INVENTOR(S): MARIASIU FLORIN EMIL, VARGA BOGDAN OVIDIU, DEAC TEODORA ALEXANDRA

ABSTRACT: The invention relates to a device for reducing the viscosity of lube oils upon the start of internal combustion engines at reduced ambient temperatures. According to the invention, the device uses a low-power ultrasound emitter (2) which reduces the lube oil viscosity upon the start of internal combustion engines at reduced ambient temperatures and a process automation module comprising an electronic control module (3) which receives information concerning the temperature of the lube oil by means of a thermostat (5).

41. **PATENT OSIM NR. RO125211-B1 / 30.05.2016**

TITLE RO/EN: Metoda de conducere a robotilor industriali / METHOD FOR CONTROLLING INDUSTRIAL ROBOTS BASED ON SIMULATION, TRAINING AND EXPLOITATION OF THREE-LAYERED NEURAL NETWORK WITH SIX NEURONS IN INPUT LAYER DETERMINED BY SIMULATION ON MATHEMATIC MODEL OR BY EXPERIMENTATION ON PHYSICAL MODEL

INVENTOR(S): CIUPAN EMILIA, MORAR LIVIU, CIUPAN CORNEL

ABSTRACT: The invention relates to a method for controlling industrial robots. According to the invention, the method is based on the simulation, training and exploitation of a three-layered neural network having six neurons in the input layer, corresponding to the coordinates of six engine torques qi, where i=1, ..., 6, six neurons in the output layer and a number of neurons ranging between 9 and 50 in the intermediary layer, the data for training the network being determined by the simulation on a mathematic model or by the experimentation on a physical model of a robot, by imposing some successive modifications of the engine torques qi, by a pace p, and then, by

simultaneous modification of 2, 3, 4, 5 and 6 coordinates of the engine torques qi, resulting by actuating the kinematic axes related to the same, for each set of input data qi,j, i=1,..., m, there resulting a set of output data Xj,Yj, Zj, psij, tetaj, phij, which are used for training the network.

42. **PATENT OSIM NR. RO125210-B1 / 30.05.2016**

TITLE RO/EN: Metoda de instruire a robotilor pentru ocolirea obstacolelor / METHOD OF INSTRUCTING ROBOTS TO AVOID OBSTACLES IN A WORKING SPACE WHERE THE INSTRUCTION DATA IS DETERMINED BY SIMULATION USING THE MATHEMATICAL MODEL OR EXPERIMENTALLY USING A PHYSICAL MODEL OF THE ROBOT

INVENTOR(S): CIUPAN EMILIA, MORAR LIVIU, CIUPAN CORNEL

ABSTRACT: The invention relates to a method of instructing industrial robots to avoid obstacles in a working space. According to the invention, the method of instructing an industrial robot is based on modeling, instructing and exploiting a three-layered neural network having a number of k neurons in the input layer, corresponding to the number of degrees of freedom, a number of m neurons in the output layer, corresponding to the number of kinematic axes and a number n, ranging from 9 to 50 neurons in the intermediate layer, the instruction data being determined by simulation, using a mathematic model, or experimentally, using a physical model of the robot, by the convenient selection of a points cloud in a working space, an obstacle placed in the robot path being automatically avoided by an adequate network instruction with input data corresponding to some points in the direct robot path and output data corresponding to the by-pass path.

43. **PATENT OSIM NR. RO127080-B1 / 30.03.2016**

TITLE RO/EN: Instalatie de indepartare a dioxidului de carbon din gazele reziduale / PROCESS FOR RETAINING CARBON DIOXIDE FROM SPENT GASES BY CHEMICAL ABSORPTION

INVENTOR(S): VASILE HOTEA, GABRIEL BADESCU, JUHASZ JOZSEF

ABSTRACT: The invention relates to a process for retaining carbon dioxide from spent gases and to a plant for carrying out the process. According to the invention, the process consists in neutralizing the gases with a 2M solution of sodium and potassium carbonate with bicarbonate formation, followed by the thermal decomposition of the solution, at a temperature of 80...110 degrees C, with release of CO2 which is partially condensed and dried at a pressure of 2 bar, the carbon dioxide being released by pressure reduction and temperature increase up to 120 degrees C, after which it is compressed and stored. The plant claimed by the invention consists of a tank (2) in which the neutralizing solution is prepared, a pressure pump (3) which sends the 2M solution to a spent gas mixing zone (5) of a centrifugal scrubber (1) representing the absorption column, where the mixture is pulverized through a nozzle (7), the CO2-containing solution being discharged at the bottom of the scrubber, passed through a filter (9) and an exchanger (10) and entering the top part of a desorption column (11), wherefrom the resulting flow of CO2-rich vapour is passed through a condenser (12) and a drier (13) to the compression and storing zone.

44. **PATENT OSIM NR. RO128077-B1 / 30.03.2016**

TITLE RO/EN: Generator de plasma de putere mica la presiune atmosferica / LOW POWER PLASMA GENERATOR AT ATMOSPHERIC PRESSURE

INVENTOR(S): PETREUS DORIN-MARIUS, PLAIAN EMIL, GRAMA ALIN MARIUS, CORDOS EMIL, CADAR SERGIU IULIAN

ABSTRACT: The invention relates to a radiofrequency plasma generator at atmospheric pressure. According to the invention, the generator comprises an electronic commutator (1) consisting of a MOS-type transistor controlled by means of a grid (2) with a rectangular signal with variable pulse duty factor, between the supply terminal and the drain terminal of the commutator (1) there being placed a choke-coil (3) and in parallel with the commutator there being mounted a shunt capacitor (4) ensuring the load transfer during the commutations, while an RLC-type load network (5) plays the role of ensuring the commutation conditions for the MOS transistor, and a power amplifier consisting of a rectangular signal generator (6) with a role in generating the control signal which is transmitted to a block (7) controlling the grid (2) by means of which there is ensured a current amplification of the signal, said signal being necessary for controlling a power amplifier (8) at optimal parameters, at the output of the power amplifier (8) there being placed a magnetic-type voltage step-up amplifier (9) with a regulation loop (10), the output voltage of the amplifier (9) being applied to an electrode-block (11) on an active electrode (20), and by closing the field lines to a reference electrode there takes place the generation of the plasma at atmospheric pressure.

45. **PATENT OSIM NR. RO129217-B1 / 29.01.2016**

TITLE RO/EN: Dispozitiv pentru laminarea longitudinala a rotilor dintate cu dantura dreapta, pe prese / DEVICE FOR LONGITUDINAL PRESS-ROLLING OF GEAR WHEELS WITH STRAIGHT TEETH, HAS INDIVIDUAL WHEEL OF DRIVING DEFORMATION ROLLER

INVENTOR(S): MARIAN IONUT, TINTELECAN MARIUS

ABSTRACT: The invention relates to a device for the longitudinal press-rolling of the gear wheels with straight teeth. According to the invention, the device consists of a body (11) whereon there is mounted a number of deformation rollers (9) individually driven by a gear wheel (8) which takes over the rotation movement by downwardly moving a rack (5), integral inside the cover of the upper part (1), the deformation roller (9) being

actuated by a kinematic chain which comprises the deformation roller (9), the individual wheel (8) of driving the deformation roller (9) and the rack (5) with downward movement, the body (11) of the device exactly positioning both the deformation rollers (9) and the individual driving gear wheels (8), and the process of obtaining the gear wheels (8) is based on the direct contact of the deformation rollers (9) with a blank (7) which is deformed, these having an intended rotation movement induced by the downward movement of the racks (5) which determines the rotation of the driving gear wheels (8) and the reversed rotation of the deformation rollers (9).

46. PATENT OSIM NR. RO101011-B1 / 30.12.2015

: Procedeu de obtinere a unor concentrate de muscovit din pegmatite feldspatice / MUSCOVITE CONCENTRATE FROM FELDSPAR PEGMATITES PRODUCTION METHOD

INVENTOR(S): IUGA ALEXANDRU-IULIU, MORAR ROMAN, CUGLESAN IOAN, DASCALESCU LUCIAN-DORU, NEAMTU VASILE, POP DUMITRU-MITICA, VRANNAI STEFAN, SOOS MANEA CAROL, TIMBUS RADU, RANCA POMPILIU, BOLBA REMUS, MURESAN NICOLAE, KISS IOSIF, TOMESCU VALENTIN

ABSTRACT: A muscovite concentrate is obtd. from a granular material, a by prod. of processing feld-spathoid pegmatite. This material contains over 50% muscovite, spangles, quartz impurity feldspar and wood. A proposed technical soln. for the redn. of adhesive forces involves heating the material at 300-400 deg.C in an oven. Following classification in two stages and redn. of surface humidity at 150 deg.C sepn. is carried out in a three directional intensive electric field.

47. PATENT OSIM NR. RO127385-B1 / 30.10.2015

TITLE RO/EN: Minigriper compliant cu actuator piezoelectric / COMPLIANT MINIGRIPPER WITH PIEZOELECTRIC ACTUATOR MEANT FOR PRECISE MANIPULATION OF VARIOUS SIZE OBJECTS

INVENTOR(S): NOVEANU SIMONA, CSIBI IOSIF VENCEL, MANDRU DAN, NOVEANU DAN CRISTIAN, LUNGU ION

ABSTRACT: The invention relates to a compliant minigripper (1) with piezoelectric actuator (2) meant for the precise manipulation of various size objects, in applications specific to fine mechanics. According to the invention, the minigripper (1) is conceived as a monoblock structure, with some flexible couples (3) obtained by thinning the section of some symmetrically arranged kinematic elements (4) in the structure, the compliant minigripper body (1) containing ten flexible couples (3) which transmit the movement and the force, by the elastic deformation of the material they are made of, by means of the kinematic elements (4), at the outlet of the piezoelectric actuator (2), to some fastening elements (5) which carry out the manipulation, by modifying the geometric shape of the flexible couples (3) (elliptical, rectangular, parabolic, circular or rectangular with various transition radii), selecting the material that the compliant minigripper (1) is made of (steel, brass, polymethylmethacrylate, polytetrafluoroethylene etc.) as well as by the variation of the supply voltage of the piezoelectric actuator (2), there being ensured a wider range of dimensions of the objects to be manipulated as well as the use thereof in various media.

48. PATENT OSIM NR. RO129538-B1 / 30.09.2015

TITLE RO/EN: Dispozitiv de control si reglare a pozitiei sculelor cu suprafete elicoidale / DEVICE FOR SHARPENING TOOLS WITH HELICAL SURFACES, PLACED ON THE TABLE OF A SHARPENER WITH ABRASIVE DISCS

INVENTOR(S): VUSCAN GHEORGHE IOAN, MICACIU ALEXANDRU

ABSTRACT: The invention relates to a device used for sharpening tools with helical surfaces, placed on the table of a sharpener with abrasive discs. According to the invention, the device consists of a main shaft (2) whereon the tool (1) to be sharpened is fixed, the main shaft (2) passes through a ball bearing (4) inside which there is fixed, by hooping, a profiled ring (5) which is in contact with the main shaft (2), the ball bearing (4) being fastened in a box (6) which is integral with a shaft (7) of a worm gear (11), on the shaft (7) there being mounted a spring disk (8) and a pressure bearing (9) fixed in the bore hole of an upper plate (10), the worm gear (11) mounted with a wedge on the shaft (7) gears with a worm (12), at the end of a worm shaft (13) there being placed a handle (15) for gearing the worm (12), by actuating the handle (15), the worm (12) gears with the worm gear (11) which by rotation inclines the box (6) together with the ball bearing (4) under an inclination angle which coincides with the inclination angle of the screw of the tool (1) thus defining the helical walk of the tool (1), the tool (1) being driven by actuating a hand wheel (3) in one sense or another, alternately, the tool (1) performing a rotary-translation movement under an abrasive disk (16) placed at the angle.

49. PATENT OSIM NR. RO128980-B1 / 30.09.2015

TITLE RO/EN: Dispozitiv de acoperire preventiva a interiorului pieselor tubulare de dimensiuni mari / DEVICE FOR PREVENTIVELY LINING THE INTERIOR OF HOLLOW PIECES OF LARGE SIZES

INVENTOR(S): VUSCAN GHEORGHE IOAN, CIGAN VLAD

ABSTRACT: The invention relates to a device used for painting or preventively lining the interior of some hollow pieces of large sizes. According to the invention, the device comprises a support plate (11) whereon there is fastened an electric motor (1) and a reducer (3), the movement being transmitted from the electric motor (1), through the reducer (3), to a case (8) provided with bevel gears, through a bevel gear (2), on the case (8) there being mounted three telescopic legs (9) having, at the ends, a inclinable friction wheel (6), the feeding movement being performed due to a propeller with three arms which come in contact with a hollow semi-finished product (12) by means of the friction wheels (6) which axially displace the entire assembly, the adjustment of the propeller inclination angle being carried out both manually, and by means of a step-by-step electric motor (7), some air, oxygen and acetylene sources being connected to a supplying sleeve (10), in a tank (4) there being stored paint or powders for the preventive lining, which are entrained by an air jet, on the interior surface of the hollow semi-finished product (12) through an atomizer (5) which performs a helical movement together with the case (8).

50. PATENT OSIM NR. RO129228-B1 / 28.08.2015

TITLE RO/EN: Procedeu de obtinere a unui material compozit fonoabsorbant / SOUNDPROOFING COMPOSITE MATERIAL COMPRISES FIR SAWDUST GRAINS AND POLYURETHANE FOAM

INVENTOR(S): TIUC ANCUTA ELENA, RUSU TIBERIU, NEMES OVIDIU

ABSTRACT: The invention relates to a soundproofing composite material and process for preparing the same. The claimed material comprises 70...80% fir sawdust grains having a humidity of 9.3...10.4% and a density of 0.035...0.039 g/cm3 and 20...30% polyurethane foam, the percentage being expressed by weight. The claimed process consists in vigorously mixing the polyol and isocyanate components in a ratio of 100:70 for 5...8 s, at the room temperature, afterwards adding fir or beech sawdust grains, the resulting mixture is poured into a mould and it is maintained for 30...45 min for the reaction completion, wherefrom there results a material having a density of 0.14...0.17 g/cm3, a compressive strength of 0.03...0.07 N/mm2, a thermal conductivity of 0.039...0.083 W/m.K and an acoustical absorption coefficient alpha within the range 0.55...0.95 in the frequency range of 1000...6300 Hz.

51. PATENT OSIM NR. RO128093-B1 / 29.05.2015

TITLE RO/EN: Procedeu de obtinere a placilor din materiale compozite polimerice armate cu fibre / PROCESS AND DEVICE FOR MAKING PLATES OF POLYMERIC COMPOSITE MATERIALS REINFORCED WITH FIBERS

INVENTOR(S): BERE PETRU PAUL, BERCE PETRU, NEMES OVIDIU, BALC NICOLAE

ABSTRACT: The invention relates to a process and a device for making plates of polymeric composite materials such as polyester, epoxy, phenolic, vinylester resins or other polymers, reinforced with fabrics made of glass fibers, carbon fibers, aramidic fibers and the like. According to the invention, the process consists in laying the composite material (3) in non-polymerized condition onto the surface of a plane mould (2), coating the same with a plastic foil (4), pressing the composite material (3) onto the mould (2) by means of a pressing device with cylinders (5) which removes the excess of composite material (3) towards the mould edges so that, by reducing the volume of composite material (3) under the plastic foil (4), there is formed a vacuum pressure which presses the composite material (3) during the entire polymerization process, and, in the end, the resulting plate of composite material is removed from the mould and the plastic foil (4) is eliminated. According to the invention, the device comprises a roller working table (1) whereon there moves the plane mould (2) with the composite material (3) covered with the plastic foil (4) and a pressing device with cylinders (5).

52. PATENT EPO NR. EP2444209-B1 / 22.04.2015

TITLE RO/EN: Metoda de generare a topologiei robotilor paraleli reconfigurabili cu actuatori verticali / METHOD FOR GENERATION OF KINEMATICAL STRUCTURES FOR RECONFIGURABLE PARALLEL ROBOTS WITH VERTICAL ACTUATORS, INVOLVES DETERMINING NUMBER OF PRISMATIC- SPHERICAL-UNIVERSAL KINEMATIC CHAINS BASED ON DESIRED NUMBER OF DEGREES OF FREEDOM

INVENTOR(S): BRISAN CORNEL, HILLER MANFRED

ABSTRACT: The method involves knowing the number of degrees of freedom of the robot. The number of prismatic- spherical-universal (PSU) kinematic chains is determined based on the desired number of degrees of freedom. The number of the prismatic - spherical - rotational (PSR) kinematic chains is determined. The conditional expression relating the robot and kinematic chains is satisfied. The reconfigurability of the structures is assured by the utilization of the mounting dimensions between the elements that form all the kinematic chains.

53. PATENT OSIM NR. RO127399-B1 / 30.03.2015

TITLE RO/EN: Beton cu agregate din deseuri de sticla / CONCRETE COMPOSITION USED FOR CONSTRUCTION, COMPRISES PORTLAND CEMENT, SUPERFINE SILICA, GLASS POWDER, RIVER AGGREGATES, CRUSHED AND SCREENED GLASS AGGREGATE, WATER, AND SUPERPLASTIFYING ADDITIVE

INVENTOR(S): MAGUREANU CORNELIA, CORBU OFELIA CORNELIA

ABSTRACT: The invention relates to a concrete composition for constructions. According to the invention, the composition consists of 15.91% Portland cement, 1.99% superfine silica, 3.97% fine glass powder, 32.55...36% river aggregates having sizes of up to 4 mm and 37...39.79% crushed and screened glass aggregate having a grain size of 4...16 mm, 5.39% mixing water and 0.40% superplastifying additive.

PATENT OSIM NR. RO127825-B1 / 27.02.2015

TITLE RO/EN: Procedeu de separare a feldspatului de cuart din minereurile pegmatitice / PROCESS FOR SEPARATING QUARTZ FELDSPAR FROM PEGMATITE ORES, INVOLVES CRUSHING AND WET GRINDING PEGMATITE ORE, REMOVING MICA BY GRAVITY SCREENING, DRAINING ORE IN FILTERING BED, CONDITIONING WITH HYDROFLUORIC ACID, AND SEPARATING

INVENTOR(S): VADAN DUMITRU, MORAR ROMAN, VADAN IOAN, SUARASAN ILIE, GOREA MARIA, VADAN MARIA

ABSTRACT: The invention relates to a process for separating quartz feldspar from pegmatite ores. According to the invention, the process consists in crushing and wet grinding a pegmatite ore until a grain size of 0.25 mm is reached, after which the mica is removed by gravity screening, the ore is drained in filtering bed until a humidity of 10% is reached, then is dried to a humidity of 0.2%, is conditioned with hydrofluoric acid, after which the product is subjected to separation in an induction magnetic field 1.4...1.6 T and finally is separated in electrostatic field to obtain quartz with a SiO_2 content of at least 98% and a Fe_2O_3 content of up to 0.08% and felspar with a Fe_2O_3 content of up to 0.55%.

54. PATENT OSIM NR. RO128500-B1 / 30.01.2015

TITLE RO/EN: Beton autocompactant fara adaosuri minerale / SELF-COMPACTING CONCRETE (C 50/60) WITHOUT MINERAL ADDITIONS, MEANT FOR PRECAST ELEMENT MANUFACTURING

INVENTOR(S): IOANI ADRIAN MIRCEA, SZILAGYI HENRIETTE, MIRCEA CALIN RADU GRIGORE

ABSTRACT: The invention relates to a concrete composition for the precast/precompressed elements manufacturing. According to the invention, the composition consists of 510 kg of cement, 920 kg of river sand with a particle size of up to 4 mm, 230 kg of coarse river aggregate, 492 kg of coarse river aggregate having the particle size of 8...16 mm, 5.61 kg of super-plastifier of polycarboxylic type and 199 kg of water.

55. PATENT OSIM NR. RO128581-B1 / 30.12.2014

TITLE RO/EN: Motor cu reluctanta comutata cu autoventilatie interna la rotor / MACHINE WITH COMMUTED RELUCTANCE MOTOR, WITH INTERNAL ROTOR SELF-VENTILATION CONSISTS OF A STATOR MADE OF ELECTROTECHNICAL STEEL SHEETS FORMING EIGHT STATOR POLES

INVENTOR(S): RUBA MIRCEA, FODOREAN DANIEL

ABSTRACT: The invention relates to a commuted reluctance motor, with internal rotor self-ventilation. According to the invention, the motor consists of a stator (1) made of electrotechnical steel sheets forming eight stator poles and an electric circuit (2) consisting of four phases, each phase comprising two coils wound around the salient poles located diametrically opposed, and a rotor (3) located inside the stator (1), also made of electrotechnical steel sheets, between every two consecutive salient poles of the rotor (3) there being located some elements (4) made of non-magnetic material, uniting the margins of the poles at the two extreme ends of the rotor (3), said elements (4) being arranged slantwise, being twisted in such a manner as to ensure a perfect alignment with the margins of the rotor poles, at the extremities of rotor (3), said elements (4) acting as an internal fan which, together with the rotor (3) movement ventilates the stator windings, forcing the warm air around the windings to get out, being replaced with cold air from outside.

56. PATENT OSIM NR. RO127706-B1 / 30.09.2014

TITLE RO/EN: Metoda securizata de comunicatie intre dispozitive fixe si mobile / SECURED SYSTEM AND METHOD OF COMMUNICATION BETWEEN FIXED AND MOBILE DEVICES

INVENTOR(S): ASTILEAN ADINA, FOLEA SILVIU, AVRAM CAMELIA, HULEA MIHAI, MIRON RADU FLORIN, LETIA TIBERIU STEFAN, CIUPAN EMILIA

ABSTRACT: The invention relates to a secured system and method of communication between fixed and mobile devices based on fingerprints. The claimed system comprises one or more emitting subsystems (1) and a receiving subsystem (2) which consists of a distributed application server connected to the Internet, the secured information transmission between these subsystems (1 and 2) being based on the use of wireless or wired communication technology, each emitting subsystem (1) comprising: a fingerprint reader (FPS), provided with a storage and processing unit enabling the communication by Bluetooth, Wi-Fi or GPRS, a device (GPS) which communicates with the fingerprint reader (FPS) and a mobile terminal (MT), embeding GPRS technology or a computer (PC), the connection to the receiving subsystem (2) being carried out by means of the mobile terminal (MT) or the computer (PC). The claimed method provides the emission and the reception of an encrypted message by using an encrypting algorithm with a symmetrical key and limited duration, the symmetrical key being generated by the use of the information resulting by reading the fingerprint of participants in a communication session and the information concerning the position thereof, and the authentication is carried out according to a protocol also implying, besides the user's fingerprint and position, the identity codes of the entities involved in the communication system and the number of the communication session between the involved users.

57. PATENT OSIM NR. RO125433-B1 / 30.07.2014

TITLE RO/EN: Dispozitiv pentru ambutisare cu asistare hidraulica / HYDRAULICALLY ASSISTED METAL SHEET DRAWING DEVICE COMPRISES A BODY SUPPORTING A DIE HAVING AN ACTIVE PLATE AND A CENTERING RING, WHERE THE BODY IS PROVIDED IN THE CENTRAL PART WITH A CAVITY

INVENTOR(S): ACHIMAS GHEORGHE, COMSA DAN-SORIN, LAZARESCU LUCIAN, ACHIMAS SORIN, CECLAN VASILE ADRIAN

ABSTRACT: The invention relates to a metal sheet drawing device, meant to be used for reducing the thickness of walls by a combined mechanic and hydraulic process. According to the invention, the device comprises a body (1) supporting a die (2) having an active plate (3) and a centering ring (4), the body (1) being provided in the central part with a cavity (5) wherein oil is accumulated and the working pressure is reached, and with an orifice (6) wherethrough the oil intake is performed, the deformation of the blank (9) being achieved by using the punch (10) which presses on the blank through the active plate (3), the drawing thereof being thus achieved.

58. PATENT OSIM NR. RO127398-B1 / 30.04.2014

TITLE RO/EN: Procedeu de obtinere a betoanelor de ultra-inalta performanta / VERY HIGH PERFORMANCE CONCRETE COMPRISES CEMENT, VERY FINE SILICA POWDER, FINE QUARTZ SAND, SHORT STRAIGHT METAL FIBRES, METAL FIBRES WITH BENT ENDS, SUPERPLASTICIZING POLYCARBOXYLIC ADDITIVE AND WATER

INVENTOR(S): MAGUREANU CORNELIA, CORBU OFELIA CORNELIA, SOSA IOAN, SZILAGYI HENRIETTE, HEGHES BOGDAN HOREA

ABSTRACT: The invention relates to a concrete composition and to a process for preparing the same. According to the invention, the composition comprises 1 CEM I 62.5 R cement mass unit and the following components expressed as units from the cement amount: 0.25...0.27 units of very fine silica powder; 0.44...0.46 units of fine quartz sand having a grain size of 0...0.7 mm; 0.15...0.17 units of fine quartz sand having a grain size of 0.4...1.4 mm; 0.09...0.095 units of short straight metal fibres, 0.09...0.095 units of metal fibres with bent ends, 0.065 units of superplasticizing polycarboxylic additive of the IV-th generation, 0.15...0.17 units of water. The process claimed by the invention consists in mixing the materials in the dry state in a forced draft mixer for 2 min, after which the water is admixed together with the plasticizer and they are mixed for 8 min and at the end there are admixed the metal fibres while stirring, thereby resulting a concrete composition to be poured into formworks, dismantled and subjected to thermal treatment.

59. PATENT OSIM NR. RO88149-B1 / 28.02.2014

TITLE RO/EN: Mecanism de rotatie oscilant pentru roboti industriali / OSCILLATING ROTATOR FOR INDUSTRIAL ROBOT - CONSISTS OF HELICOIDAL PLUNGER LOCATED IN PERFORATED SLEEVE ASSEMBLY AND COOPERATING WITH STEPPED ELECTRIC MOTOR

INVENTOR(S): POP I. IOAN, ISPAS VIRGIL, ISPAS VIOREL

60. PATENT OSIM NR. RO127480-B1 / 30.01.2014

TITLE RO/EN: Tija centromedulara autoblocanta / SELF-LOCKING INTRAMEDULLARY NAIL FOR OSTEOSYNTHESIS, HAS CENTRAL CORE WITH INTERNAL SHAFT AND MULTIPLE TUBULAR MODULES, INSERTED INTO OUTER ROD, WHERE ONE OF MODULES IS FIXED ON INTERNAL SHAFT

INVENTOR(S): COSTE CAMILIO VICTOR, GROZAV SORIN DUMITRU

ABSTRACT: The invention relates to an intramedullary nail used in the intramedullary osteosynthesis with closed focus. According to the invention, the nail comprises an outer rod (1) wherein there is inserted a central core (7) consisting of an internal shaft (8) and several tubular modules (9 and 10) provided with some indents (13), a module (9) being fixed on the internal shaft (8) and a module (10) being freely placed on the internal shaft (8), between the indents (13) being placed some screws (6) by means of which the fixation relative to the bone is carried out by a rotation motion of the internal shaft (8) of the central core (7). USE - Self-locking intramedullary nail for use in osteosynthesis. DESCRIPTION OF DRAWING(S) - The drawing shows a sectional view of a self-locking intramedullary nail.

61. PATENT OSIM NR. RO127534-B1 / 30.12.2013

TITLE RO/EN: Procedeu de obtinere a structurilor de sustinere celulara si materiale compozite destinate ingineriei tesuturilor / PROCESS FOR PREPARING CELL SUPPORTING STRUCTURES AND COMPOSITE MATERIALS MEANT FOR TISSUE ENGINEERING

INVENTOR(S): POPA CATALIN, CONT LIANA, DINDELEGAN GEORGE, SIMON VIORICA, BRIE IOANA, PAVEL CODRUTA, CANDEA VIOREL

ABSTRACT: The present invention relates to a process for directly preparing cell supporting structures by electrospinning, carried out with an installation comprising a square-shaped or an octagonal-shaped collector made of austenitic steel, having on the edges a lattice of slits whereon there is alternately placed, on both faces, a unidirectional or bidirectional arrangement of yarns of absorbable nature representing the matrix. The matrix and the yarns are made of different bioabsorbable polymers ensuring an optimal bioerosion duration and an optimal duration for maintaining the mechanical strength of the resulting membranes. From the thus resulting composite membranes there can be manufactured tubes for 3D tissue growth by bonding on template with the dissolved matrix polymer.

62. PATENT OSIM NR. RO125337-B1 / 30.10.2013

TITLE RO/EN: Metoda pentru determinerea modulului de elasticitate longitudinal al materialelor / METHOD FOR DETERMINING VALUE OF LONGITUDINAL ELASTIC MODULUS OF MATERIAL INVOLVES CREATING IMPULSE BY BODY OF MASS, DETERMINING TEST SAMPLE BY SOME HELICAL SPRINGS AND SUPPORTING RETURN PLATE

INVENTOR(S): ARGHIR MARIANA

ABSTRACT: The invention relates to a method for determining the value of the longitudinal elastic modulus of a material. According to the invention, the method consists in taking over 40...60% of the impulse created by a body (4) of a mass (M), launched from a height (h), determined above a test sample (1) by some helical springs (6) supporting a return plate (5) and mounted on a rest plate (8), the test sample (1) taking over 20...30% of the impulse value, while the rest of it is taken over by the helical springs (6) through the further compression thereof.

63. PATENT OSIM NR. RO126255-B1 / 30.09.2013

TITLE RO/EN: Motor electric trifazat cu reluctanta comutata tolerant la defecte / MODULAR FAULT-TOLERANT ELECTRIC MOTOR COMPRISING NINE MODULES ASSEMBLED OF STEEL SHEETS AND REINFORCED BY MEANS OF NON-MAGNETIC RODS, ON THE YOKES OF MODULES THERE ARE WOUND SOME COILS

INVENTOR(S): RUBA MIRCEA, SZABO LORAND

ABSTRACT: The invention relates to a modular fault-tolerant electric motor, operating on the principle of minimal magnetic reluctance, which consists of a stator (1) comprising nine modules (2) assembled of steel sheets and reinforced by means of non-magnetic rods (3), on the yokes of modules (2) there are wound some coils (4), the modules being magnetically insulated by some non-magnetic spacers (5) which also ensure the required angular shift from one another, and by means of other frontal non-magnetic spacers (11), the modules are insulated with respect to some shields (9) which comprise some rolling bearings (10) wherein there rotate a shaft (7) of a rotor (6).

64. PATENT OSIM NR. RO125014-B1 / 28.06.2013

TITLE RO/EN: Compozitie pentru placi, panouri si tavane casetate usoare / COMPOSITION FOR LIGHT POROUS SOUND-ABSORBING AND HEAT INSULATING PANELS, PLATES AND COFFERED CEILINGS

INVENTOR(S): ARGHIR MARIANA, UNGUR PATRICIA, UNGUR PETRU, MIHAILA STEFAN, PAFUCAN TEODOR

ABSTRACT: The invention relates to a composition for sound absorbing and heat insulating building elements used in civil and industrial buildings. According to the invention, the composition comprises moulding alpha plaster, micronized calcite, dehydrated lime, white cement, expanded polystyrene or expanded pearlite beads, set retarders, oxide powders and dyestuffs.

65. **PATENT OSIM NR. RO127090-B1 / 30.01.2013**

TITLE RO/EN: Robot modular autopropulsat / MODULAR INSPECTING AND EXPLORING ROBOT COMPRISING PLURALITY OF MODULES FOR CHECKING OPERATION STATE OF INTERNAL WALL OF PIPES WITHIN GAS GRIDS, SEWAGE SYSTEMS OR PIPELINES FOR CIRCULATION OF OTHER GASEOUS OR LIQUID MEDIA

INVENTOR(S): TATAR MIHAI OLIMPIU, ALUTEI ADRIAN, CIREBEA CLAUDIU IOAN
ABSTRACT: The invention relates to a robot comprising a plurality of modules for checking the operation state of the internal wall of pipes within gas grids, sewage systems or pipelines for the circulation of other gaseous or liquid media. According to the invention, the robot comprises at least one passive module which consists of a cylinder (11) provided at its ends with two covers (10) in which there are cut some holes through which some supply cables pass, its motion being ensured by two groups of three wheels (8) mounted within some suspensions with adjustable travel on the radial direction, each of them consisting of some rods (6) supporting a wheel (8) movable inside a cylinder (3), a compression spring (5) being mounted between them and a fork of the rod (6), where the rods (6) are provided with through holes with the centres placed on a generatrix, wherethrough a bolt (4) can get in/out, the suspensions being fixed to some support elements (1) detachably assembled with the covers (10).

66. **PATENT OSIM NR. RO126271-B1 / 28.12.2012**

TITLE RO/EN: Robot chirurgical / SURGICAL ROBOT COMPRISES A POSITIONING MODULE WITH THREE DEGREES OF MOBILITY, A POSITIONING MODULE WITH FIVE DEGREES OF MOBILITY WHICH SUPPORTS A SURGICAL INSTRUMENT WITH THREE DEGREES OF MOBILITY AND ACTIVE MOTION

INVENTOR(S): PLITEA NICOLAE, PISLA DOINA LIANA, VAIDA LIVIU CALIN, GHERMAN BOGDAN GEORGE

ABSTRACT: The present invention relates to a surgical robot comprising a positioning module (1) with three degrees of mobility, a positioning module (31) with five degrees of mobility which supports a surgical instrument (32) with three degrees of mobility and active motion, by means of an active or passive cardan couple (2), there being also provided the embodiment that, for complex interventions, a system of surgical robots may be used, said system comprising a central robot (57) with an orientation module (1) with three degrees of mobility, and two robots (58) and (59), respectively, provided with orientation modules (31) with five degrees of mobility and a surgical instrument (32), in which the central robot (57) conducts a laparoscope or a video camera and robots (58) and (59) carry out functions specific to surgeon hands.

67. **PATENT OSIM NR. RO126456-B1 / 29.11.2012**

TITLE RO/EN: Metoda de germinare a semintelor cu radiatii infrarosii / SEED GERMINATION METHOD INCLUDES PLACING THE SELECTED SEEDS INTO BOXES AND EXPOSING THEM TO INFRARED RADIATION OF HIGH WAVELENGTH UNTIL THE SEEDS GERMINATE OR UNTIL THE FIRST LEAVES OR FLOWERS EMERGE

INVENTOR(S): COMAN MIRELA

ABSTRACT: The invention relates to a method for seed germination. According to the invention, the method includes placing the selected seeds into boxes and exposing them to infrared radiation of high wavelength until the seeds germinate or until the first leaves or flowers emerge, after which the seedlings may be transferred to the field.

68. **PATENT OSIM NR. RO125756-B1 / 29.11.2012**

TITLE RO/EN: Instalatie de retinere a dioxdului de carbon si a dioxidului de sulf din gazele reziduale / PROCESS FOR THE INTEGRATED RETENTION OF SULPHUR DIOXIDE AND CARBON DIOXIDE FROM RESIDUAL GASES

INVENTOR(S): HOTEA VASILE

ABSTRACT: The invention relates to a process for retaining sulphur dioxide and carbon dioxide from residual gases. According to the invention, the process consists, in a first stage, in treating the residual gases with a solution of sodium carbonate for SO2 absorption, followed, in a second stage, by CO2 adsorption on zeolite volcanic tuff, wherefrom there result residual gases having limit values of sulphur dioxide and carbon dioxide for

being discharged into the atmosphere. The claimed installation consists of a reservoir (2) for preparing the sodium carbonate solution, a buffer reservoir (3) wherefrom a barrel exhausting pump (7) transfers the sodium carbonate solution to a centrifugal scrubber (1) with sprinkling nozzles, wherefrom the washing solution flows out into a reservoir (4), and a pump (8) carries out the recycling thereof into the scrubber (1), then the washing solution, containing sodium sulphite and bisulphite, in the stirrer reservoir (4) is heated in order to convert the sulphite into bisulphite and then transferred to a tilting crystallizer in order to separate the crystallized sodium bisulphite, the gases from which SO2 has been retained come out from the centrifugal scrubber (1) and are led to two CO2 adsorption columns (6) which are natural zeolite filters, and then are discharged into the atmosphere through some electrovalves (9), in a dispersion flue (10), the installation being also provided with a computerized operation system (11).

69. PATENT OSIM NR. RO123490-B1 / 29.11.2012

TITLE RO/EN: Sistem fara fir, pentru telemasurarea inclinatiei / WIRELESS SYSTEM FOR REMOTE MEASURING OF INCLINATION OF OBJECT IN VERTICAL PLANE OF PLACE

INVENTOR(S): MUNTEANU RADU , MOGA DANIEL, IVAN DUMITRU MIRCEA, DOBRA PETRU, MUNTEANU RADU ADRIAN, MOGA ROZICA GABRIELA, VELEA LUCIAN MARIUS

ABSTRACT: The invention relates to a wireless system for measuring the inclination of an object in respect of the vertical plane of the place, the system being carried out on a hardware platform which achieves the measurement of gravity acceleration on three orthogonal directions, using a 3D acceleration sensor (9), for the conversion of said acceleration values into angles relative to the direction and sense of the gravity acceleration vector g there being used an A/D controller (4), based on a computing algorithm implemented with a microcontroller processing unit (2), the measured values being then communicated via an RF transceiver interface (3), to a mobile acquisition unit (7) which displays/stores the measured values and communicates the same to some computing equipments (8), such as PC or PDA, the system being power supplied from an accumulator ACC (6), by means of a management block MA (5) having the function of charging control and monitoring of the charge state of the accumulator ACC (6), the so obtained data being then transmitted to the microcontroller processing unit (2) for being interpreted and then remotely communicated to the acquisition unit (7).

70. PATENT OSIM NR. RO123479-B1 / 28.09.2012

TITLE RO/EN: Aruncator pneumatic pentru matrite de injectat / PNEUMATIC EJECTOR FOR INJECTION MOLD, COMPRISES CYLINDER, PISTON WITH ROD FIXED BETWEEN COVER AND GUIDING BUSHING, CUSHIONING SPRING AND SOME SEALING RINGS

INVENTOR(S): HARAGAS SIMION, TUDOSE LUCIAN MIRCEA, POP DUMITRU OVIDIU

ABSTRACT: The invention relates to a pneumatic ejector employed in the construction of injection moulds for plastics with a view to automatically removing pieces from the moulds. According to the invention, the pneumatic ejector comprises a cylinder (1), a piston (2) with a rod (3) fixed between a cover (4) and a guiding bushing (5), a cushioning spring (6), some sealing rings (7, 8, 9, 10 and 11), where the pressurized air supply of the two cylinder chambers is made through a channel (a) cut into the cover (4) and through another channel (b) cut into the cylinder (1), the channel (a) being supplied with pressurized air for the ejection stroke through a channel (a1) and the channel (b) being supplied with pressurized air for the return stroke through a channel (b1).

71. PATENT OSIM NR. RO123447-B1 / 30.05.2012

TITLE RO/EN: Senzor potentiometric pe baza de ionofor porfirinic cu selectivitate inalta pentru argint / POTENTIOMETRIC SENSOR BASED ON PORPHYRIN IONOPHORE WITH HIGH SELECTIVITY TO SILVER

INVENTOR(S): FAGADAR-COSMA EUGENIA LENUTA, VLASICI DANA, PICA ELENA MARIA, COSTISOR OTILIA, COSMA VIORICA, OLENIC LILIANA, BIZEREA OTILIA

ABSTRACT: The invention relates to a potentiometric sensor for measuring the concentration of silver in liquid samples of various origins and to a process for carrying out the same. According to the invention, the sensor has a body (1) provided with a lid (2) and at the opposite end of the lid (2) there is a conductive copper support (3) which is attached to the body (1) with epoxy resin and on one face of the support (3) there is attached a central wire (6) of the connection cable, while on the other face of the support (3) there is formed a membrane (4), selective to Ag+, made of polyvinyl chloride (PVC), plastified with diethylhexyl sebacate (DOS), wherein there is included a composition which contains an ionophore, namely 5,10,15,20-tetrakis-(3-hydroxyphenyl) porphyrine and a lipophilic additive, tetrakis(4-chlorophenyl) potassium borate, the mass ratio PVC:porphyrine:DOS:additive being 33:2:66:1.

72. PATENT OSIM NR. RO123425-B1 / 30.04.2012

TITLE RO/EN: Procedeu de obtinere a pulberii de compusi intermetalici IrAl si IrAl3 si tinta de iradiere pentru gamagrafie industriala obtinuta din aceasta / PROCESS FOR PREPARING THE POWDER OF IrAl AND IrAl3 INTERMETALLIC COMPOUNDS AND IRRADIATION TARGET FOR INDUSTRIAL GAMMAGRAPHY OBTAINED THEREWITH

INVENTOR(S): CARLAN PAULA, CHICINAS IONEL

ABSTRACT: The invention relates to a process for preparing sinterable powders of IrAl and IrAl3 intermetallic compounds meant to be used for obtaining irradiation targets for sources. The process claimed by the invention is a process of mechanical alloying of Ir and Al granules by crushing the same in a stainless steel ball planetary mill, under a protective argon atmosphere. The ball volume : material volume ratio is 20 : 1 at an enclosure filling degree of 35%, the milling time for forming the IrAl compound is 8 h and the milling time for forming the IrAl3 compound is 28 h. The resulting irradiation target exhibits uniform dispersion of the activable element and reduced self-shielding factor.

73. PATENT OSIM NR. RO125006-B1 / 30.09.2011

TITLE RO/EN: Compozitie pentru pansamente si corsete ortopedice usoare si poroase / COMPOSITION FOR DRESSINGS AND LIGHT AND POROUS ORTHOPAEDIC CORSETS

INVENTOR(S): ARGHIR MARIANA, UNGUR PATRICIA, UNGUR PETRU, MIHAILA STEFAN, LEZEU IOAN

ABSTRACT: The invention relates to a composition for dressings and orthopaedic corsets used in orthopaedy, for fixing the limbs or other parts of the osseous system of human body in case of fractures and luxation. According to the invention, the composition consists of: pottery plaster, white cement, expanded polystyrene granules or expanded pearlite and tartaric acid, as setting retarder.

74. PATENT OSIM NR. RO123245-B8 / 29.04.2011

TITLE RO/EN: Procedeu de obtinere a tuburilor poroase prin rulare cu strat elastic a tablelor sinterizate / PROCESS FOR MAKING POROUS TUBES BY THE ROLLING WITH ELASTIC LAYER OF SINTERED SHEET METAL

INVENTOR(S): VIDA-SIMITI IOAN, CIUPAN CORNEL

ABSTRACT: The invention relates to a process for making a plain or profiled tube-shaped piece of sintered porous sheet metal, by rolling the sheet metal about a roller, using an element coated with an elastic layer. According to the invention, the process consists in using a rigid roller (1) having the diameter corresponding to a tube, and a satellite roller (2) having a larger diameter than the rigid roller (1), covered with an elastic element (3), which performs a planet motion about the rigid roller (1), the planet motion of the satellite roller (2) being composed of a rotation about an axis of the rigid roller (1) and a rotation about its own axis, the elastic element (3) being made of rubber, polyurethane or another elastic material, a support (4) ensuring the position adjustment between the two rollers (1 and 2) and the pressure adjustment relating to the pressing corresponding to the deformation of the porous material, the porous sheet metal (5) being deformed by its passing between the rigid roller (1) and the elastic element (3) of the satellite roller (2).

75. PATENT OSIM NR. RO123261-B8 / 29.04.2011

TITLE RO/EN: Sistem de monitorizare a incarcarii progresive a membrului inferior in recuperarea posttraumatica / SYSTEM FOR MONITORING THE PROGRESSIVE LOADING OF A LOWER LIMB IN POST-TRAUMATIC REHABILITATION

INVENTOR(S): MUNTEANU RADU, MOGA DANIEL, NEAGA FLORIAN CLAUDIU, PETREUS DORIN, DUMITREAN RADU MIHAI, MUNTEANU MIHAI, VLADAREANU LUIGE

ABSTRACT: The invention relates to a system for monitoring the progressive loading of a lower limb and measuring the pressure force at the sole level within a post-traumatic rehabilitation process, said system comprising a network of elastic chambers (CE1, CE2, CE3) located at the level of the lower limb sole under three anatomic areas of maximal pressure of the patient's sole, said chambers communicating through a tubing (T) coupled to a pressure transducer (SP) which detects the current maximal pressure and transmits it to a control and measuring unit (BM) where it is converted into a digital value by a conversion circuit (A/D) then it is transformed into a force value by means of a calibration algorithm implemented on a processing unit (Microcontroller) of the measuring unit and compared with the threshold values stored in the memory of the measuring unit (BM), a warning device (AAL) generating acoustic and light signals when the maximal value of the force measured in a programmed period of time exceeds the pre-established threshold value, the values of various parameters (Tmas, Fs, FP, D) stored in the non volatile memory of the processing unit (Microcontroller) being read or modified by a wireless communication with the measuring unit (BM) by means of an interface (IR)

implemented by a Transceiver unit (RF), the supply of the monitoring system being carried out by components belonging to the supply unit (A), an accumulator (ACC) and a charging device (I).

76. PATENT OSIM NR. RO122986-B1 / 28.05.2010

TITLE RO/EN: Circuit de cuplaj fara contact / CONTACTLESS COUPLING CIRCUIT FOR PROCESSING INFORMATION AND PERFORMING INFORMATION EXCHANGE BETWEEN THEM AND TRANSDUCERS SERVING

INVENTOR(S): MUNTEANU RADU IOAN, MOGA DANIEL, MUNTEANU RADU ADRIAN, MUNTEANU MIHAI STELIAN

ABSTRACT: The invention relates to a contactless coupling circuit, meant to supply the systems for processing information and performing the information exchange between them and the transducers serving them, according to the invention, the coupling circuit consisting of two sub-circuits, an independent information processing sub-circuit (S1), which provides the energy supply of the contactless coupling circuit and a dependent information processing sub-circuit (S2) connected to a transducer serving a certain application. The independent information processing sub-circuit (S1) consists of a central unit (UC1), a controlled oscillator with programmable frequency (OCFP), a current control stage (ECC), a unit (BA) for supplying the independent information processing sub-circuit (S1), being magnetically connected, by means of a first coil (B1) with the dependent information processing sub-circuit (S2), which comprises, for this purpose, a coil (B2), a voltage stabilizing and rectifying block (RST) as well as a central unit (UC2), which performs the information exchange with the mentioned transducer, the useful and control signals being passed through some modulator/demodulator and conversion blocks (M/DC1 and M/D C2) and then circulated, between the two information processing sub-circuits (S1 and S2) by means of two infrared emission/reception blocks (BERI1 and BERI2), one for each of the mentioned information processing sub-circuits (S1 and S2).

77. PATENT OSIM NR. RO122976-B1 / 28.05.2010

TITLE RO/EN: Sistem si procedeu pentru masurarea indirecta a masei obiectelor aflate in miscare / SYSTEM FOR INDIRECTLY MEASURING MASS OF OBJECTS IN MOTION COMPRISES CENTRAL PROCESSING UNIT WITH SET OF INTERFACES FOR CATCHING AND TAKING OVER IMAGES

INVENTOR(S): MUNTEANU RADU IOAN, MOGA DANIEL, MUNTEANU RADU ADRIAN, MUNTEANU MIHAI STELIAN

ABSTRACT: The invention relates to a system for indirectly measuring the mass of the objects in motion, by using software applications for the aquisition and processing of visual information, for control and for user interface, system comprising a central processing unit (UC), provided with a set of interfaces (I1...In) towards the devices (CA1, CA2...CAn) for catching and taking over images and an interface (IM) towards a system for monitoring (M1) the environment whereto there are coupled the sensors (S1...Sn) providing information on the environment wherein the objects are displaced, the processing unit (UC) having optionally an interface (IC) towards a control subsystem (C1) coupled to some execution elements (ACT1, ACT2...ACTn), from the analysis of the information received and the extraction of the values of the objects geometrical characteristics and the interpolation based on the built transfer surface, with the masses of the determined bodies, there being obtained the indirectly measured mass value (mI) of the visualized object.

78. PATENT OSIM NR. RO122932-B1 / 30.04.2010

TITLE RO/EN: Stand experimental termic cu comanda controlata a perturbatiilor / EXPERIMENTAL STAND WITH THERMAL ENCLOSURES COMPRISES ADJACENT ENCLOSURES, PRINCIPAL ENCLOSURE, ELEMENTARY ENCLOSURES, ELECTRICAL RESISTOR, SUPPLY UNIT AND TEMPERATURE TRANSDUCER

INVENTOR(S): ISOC DORIN, IGNAT AURELIAN DOREL

ABSTRACT: The invention relates to an experimental stand with thermal enclosures, meant for practical works and laboratory research studies on conducting technical processes of complex dynamic properties. According to the invention, the experimental stand comprises some adjacent enclosures (I1, I2, I3 and I4) of which one is a principal enclosure (I1), and the others are elementary enclosures (I2, I3 and I4) formed by means of some removable walls (5, 6 and 7), each enclosure being separately heated by an electrical resistor (R1, R2, R3 and R4), by means of a supply unit (UCT1, UCT2, UCT3 and UCT4), the temperature of each enclosure being measured by a temperature transducer (TT1, TT2, TT3 and TT4), while the control of the supply units (UCT1, UCT2, UCT3 and UCT4)is achieved by a central control unit (UC) which also controls a resistor (R5) located inside a guide body (G), where a turbine (T) of a fan driven by an electric motor (M) blows air which enters the enclosures by some slot covers (C1, C2, C3 and C4) located at the top part of the enclosures.

79. PATENT OSIM NR. RO122822-B1 / 26.02.2010

TITLE RO/EN: Motocompresor / MOTOR-COMPRESSOR USED IN EG.MINING EQUIPMENTS COMPRISES BASE BODY WHERE MOTOR AND COMPRESSOR ENCLOSURES ARE SEPARATED INTO ENCLOSURES, DRIVING CYLINDER WITH JACKET, VALVES, INJECTOR, INTAKE AND COMPRESSION VALVE AND PISTON

INVENTOR(S): CARNARU STELIAN COSMIN

ABSTRACT: The invention relates to a motor-compressor meant to function as such or in batteries, in various applications, such as mining equipments, rock drills etc. According to the invention, the motor-compressor has a more simple construction by the fact that, inside the base body (1), the motor and compressor enclosures are separated into three enclosures (a, b, c) representing the very same volume, such that the first enclosure (a) which is the driving enclosure, has a driving cylinder provided with a jacket (2), a pair of valves (3 and 4), and an injector (5), the third extreme enclosure (c) is compressing and has a jacket (6) and a pair of valves, an intake valve (7) and a compression valve (8), a piston (9, 10) slide in each of the two extreme enclosures (a, c), the two pistons being coaxially rigidly connected with a common rod (11) provided in the middle enclosure (b).

80. PATENT OSIM NR. RO122790-B1 / 29.01.2010

TITLE RO/EN: Senzor potentiometric nitrit-selectiv / NITRITE-SELECTIVE POTENTIOMETRIC SENSOR FOR MEASURING NITRITE CONCENTRATION IN SAMPLES OF VARIOUS ORIGIN

INVENTOR(S): VLASICI DANA, PICA ELENA MARIA, FAGADAR-COSMA EUGENIA LENUTA, BIZEREA OTILIA, COSTISOR OTILIA, COSMA VIORICA

ABSTRACT: The invention relates to a nitrite-selective potentiometric sensor for measuring nitrite concentration in samples of various origin such as environmental pollution samples, food control samples, scientific research samples. According to the invention, the sensor has a body made of polyvinyl chloride bar, which is provided, at its lower part, with a nitrite-selective membrane, formed directly on a copper tablet, the membrane being based on plasticized polyvinyl chloride with o-nitrophenyl octyl ether (O-NPOE) which has embedded the Co(III)-tetraphenylporphyrin ionophore (CoTPPCl) and trioctylmethyl-ammonium chloride (TOMACl)as lipophilic additive.

28, Memorandumului Street
400114, Cluj-Napoca, Romania
Tel. + 4 0264 202 395
Fax + 4 0264 592 055
www.utcluj.ro