Name: Center Of Scientific Research Of Environment, Food And Health Safety- Physical-Chemical Analysis

Acronym: CCESMAS

Logo: 

Site: http://chimie-biologie.ubm.ro/cercetare.html

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Director: Prof. Dr. Eng. Anca Mihaly Cozmuta

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Areas of expertise

I. Food safety and security: • Traceability of contaminants along of food chain • Intelligent and active packages for food
II. Environment: • Environment monitoring; Recovery of valuable metals (Au, Ag, Cu, Zn) from different wastes;
II. Science of material: • Nanomaterials: preparation, characterization and applications in depollution, recovery of metals, self cleaning
IV. Chemometry: • Statistically processing the experimental data; • Mathematical modelling of experimental data

Team and key skills

Prof. Dr. Eng. Anca Mihaly Cozmuta – Food control and expertise; traceability of contaminants along of food chain; food packaging;
Assoc. Prof. Dr. Camelia Nicula – Biochemistry analysis (sugars, proteins, lipids, enzymes) in different matrices
Lecturer Dr. Anca Peter – Nanotechnologies based on TiO2 (obtaining, characterization, practical applications)
Assoc. Prof. Dr. Eng. Leonard Mihaly Cozmuta – Recovery of valuable metals from wastes; rehabilitation of polluted areas; statistically processing the experimental data; mathematical modelling of experimental data

Infrastructure

1. Perkin Elmer atomic Absorbtion Spectrometer Analyst 800 with flame and graphite oven; lamps: Au, Ag, Pt, Cu, Zn, Ca, Mg, Na, K, Mn, Ni, Fe, Co, Cr, Ni, Li.
2. Analyzer TOC Skalar Primacs solides; Analizor TOC Skalar Primacs liquids – analysis of organic and total carbon in samples
3. IR spectrometer FT-IR Perkin Elmer BXII – range 7800 – 100 cm⁻¹
4. Vegetation room MLR-351
5. Berghof MWS2 oven speed wave 5.2 microwave oven – dissintegration of environment, food, pharmaceutical and cosmetics samples
6. Ultrapure water system BARNSTEAD EASYpure RoDi: inverse osmoses and UV oxidation (water resistivity 18,2 Mohm·cm; bacteria: less than 1 CFU/ml, TOC ≤ 5 ppb)
7. Kjeldahl disintegration and solvent extractions systems – Velp Scientifica
8. UV reactor with lamp and solution recirculation: range: 190 - 1100 nm; th spectral band wide: 0.5 - 4 nm; deuteriumm and wolfram halide lamps
9. Perkin Elmer Lambda 35 spectrometer for liquid, solids, powders and paste samples analysis
Development strategy

- Participation to national and international financing competitions for partnerships establishing with other research teams and purchasing of modern analysis equipment
- Publication of scientific results in high rank journals
- The selection of undergraduate and master students with a solid theoretical knowledge in our fields of research and their training for research

Representative projects

NATIONAL RESEARCH PROJECTS

“Rehabilitation of tailings ponds by application of amendments and cultivation of vegetal species with high adaptability to the heavy metals – RIVAM”; http://chimie-biologie.ubm.ro/RIVAM/
Coordinator of consortium: Associate professor dr. Leonard Mihaly Cozmuta- North University of Baia Mare, Romania
Members: assoc.prof. dr. Camelia (Varga) Nicula, prof.dr. Anca Mihaly Cozmuta, lecturer dr. Anca Peter, etc.
Range: 2008-2011
Funding source: CNMP - PNCDI 2
Partners: University of Oradea, Agricultural Research Institute of Livada, Satu Mare
Budget: 1,900,000 RON

Coordinator of consortium: Assoc.prof. dr. Camelia (Varga) Nicula – North University of Baia Mare
Members: assoc.prof. dr. Leonard Mihaly Cozmuta, prof.dr. Anca Mihaly Cozmuta, lecturer dr. Anca Peter, etc.
Range: 2008-2011
Funding source: CNMP- PNCDI 2
Partners: University of Oradea, Agricultural Research Institute of Livada, Satu Mare, Medical Faculty of Brasov
Budget: 1,900,000 RON

“Integrated application of databases for adopting and restructuring of protection natural and artificial factors in zootechnic farms –AIBD”
Director of project for North University of Baia Mare team: prof.dr.ing. Anca Mihaly Cozmuta
Members: prof. dr. Leonard Mihaly Cozmuta, assoc.prof. dr. Camelia Varga, etc.
Range: 2005-2008
Funding source: CALIST Program
Partners: USAMV Cluj Napoca (coordinator of consortium), North University of Baia Mare, Gent University (Belgium), Science Academy of Moldova Republic –Zoology Institute
Budget: 100, 000 RON for NUBM

“Designing the hazards charts and environment assessment in mining areas of Maramures and Satu Mare counties using GIS – SIG”
Director of project for North University of Baia Mare team: prof.dr.ing. Anca Mihaly Cozmuta
Members: assoc.prof. Leonard Mihaly Cozmuta, assoc. prof. dr. Camelia Nicula
Range: 2005-2008
Funding source: CNCSIS-Romania
Partners: Romanian Institute of Geography (coordinator of consortium), ICIA Cluj Napoca, Geoproiect Bucharest, North University of Baia Mare, FSM Cluj Napoca
Budget: 190,000 RON for NUBM

INTERNATIONAL RESEARCH PROJECTS

“Smart functions of packages containing nano-structured materials in food preservation – SMARTPACK” – 7-065 / 26.09.2012;
Coordinator: lecturer dr. Anca Peter
Members: Leonard Mihaly Cozmuta, Anca Mihaly Cozmuta, Camelia Nicula
Range: 2012-2015
Partners: ICA-Bucuresti-Romania, Babes Bolyai University-Cluj Napoca-Romania, SC L&G Consulting SA -Romania, Warsaw University of Technology – Poland
Budget: 530.000 euro

Coordinator: assoc.prof. dr.ing. Leonard Mihaly Cozmuta NUBM-Romania
Members: Anca Mihaly Cozmuta, Camelia Nicula, Anca Peter
Range: 2009-2011
Partners: North University of Baia Mare, University of Johannesburg – South Africa
Budget: 230990 RON

SERVICES CONTRACTS

Analyzing and physically-chemically characterization of liquid and solid samples-DAC, 39./16.05.2012-2014
Coordinator of contract: assoc. prof. dr. ing. Leonard Mihaly Cozmuta
Members: prof.dr.Anca Mihaly Cozmuta, lecturer dr. Anca Peter, assoc.prof.dr. Camelia Nicula
Partners: CCESMAS, National Center for Expertise of Products- LAREX

Significant results

PUBLISHED PAPERS IN ISI QUOTATION JOURNALS


7. A. Peter, C. Nicula, A. Mihaly Cozmuta, L. Mihaly Cozmuta - Chemical and sensory changes of different dairy products during storage in packages containing nano-crystallized TiO2, International Journal of Food Science and Technology, 47, 1448–1456


The offer addressed to the economic environment

| Research & development in core areas | • Pollution monitoring; • Rehabilitation of polluted areas; • Physical-chemical control and expertise of food; • Food packaging; • Nanomaterials: preparation, characterization, applications |
| Research & development in applied fields | • Recovery of valuable metals (Au, Ag, Cu) from wastes; • Waste waters treatment; • Application of nanomaterials in environment depollution, food industry, self-cleaning materials; • Intelligent and active food packages |
| 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 |
Fig. 1. Environmental Test Chamber

Fig. 2. Atomic absorption Spectrometer AAAnalyst 800 (Perkin Elmer)

Fig. 3. FTIR BX2

Fig. 4. UV reactor