

RESEARCH LABORATORY FOR MANUFACTURING PARTS FROM COMPETITIVE MATERIALS

Contact details

Name	Research Laboratory for Manufacturing Parts from Competitive Materials	
Acronym	CoMaRLaMP (RLMPCM)	
Logo		
Site	http://research.utcluj.ro/tl_files/research/Research%20Domain/Industrial%20Engineering%20and%20Management/FAPIMAC_GrozavSorin.pdf	
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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. 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, Senior Lect. Dr. Eng. Adrian Popescu, PhD Eng. Alexandru Dumitru Sterca

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. Grozav S.D., Sterca A.D., Kociško M., Pollák M. and Ceclan V., “Feasibility of Predictive Models for the Quality of Additive Manufactured Components Based on Artificial Neural Networks”, MACHINES, Volume 10, Issue 2, DOI: 10.3390/machines10020128, <https://www.mdpi.com/2075-1702/10/2/128>, 2022;

2. Pollak M., Kocisko M., Petrus J., Grozav S.D., Ceclan V., "Research into the Impact of Spindle Speed and Feed Rate Changes on the Life of a Deep-Drilling Technology Tool", MACHINES, Volume 10, Issue 4, DOI: 10.3390/machines10040268, Repository link: <https://www.mdpi.com/2075-1702/10/4/268>, 2022.
3. Serban, Florica Mioara; Grozav, Sorin, Ceclan, Vasile; Turcu, Antoniu - Artificial neural networks model for springback prediction in the bending operations - TEHNICKI VJESNIK - TECHNICAL GAZETTE, Volume 27, Issue 3, Pages: 868-873, Published: Jun 14, 2020, <https://doi.org/10.17559/TV-20141209182117>
4. Alexandru D. Sterca, Roxana-Anamaria Calin, Lucian Cristian, Eva Maria Walcher, Osman Bodur, Vasile Ceclan, Sorin Dumitru Grozav, Numan M. Durakbasa - Evaluation of Fused Deposition Modeling Process Parameters Influence on 3D Printed Components by High Precision Metrology - Digitizing Production Systems, Selected Papers from ISPR2021, October 07-09, 2021, Online, Turkey, SPRINGER 2022, ISBN: 978-3-030-90421-0
5. David Tica, Sorin Cosmin Cosma, Osman Bodur, Numan M. Durakbasa, Sorin Grozav, Vasile Ceclan, Jan Rehor, Dumitru Alexandru Sterca, Eva Maria Walcher, Effects of Drag Finishing on a SLM-manufactured Titanium Reconstruction Plate, ISPR 2022 Conference, 06-08 October 2022, Antalya, Turkey.
6. Lucian-Nicolae Cristian, Osman Bodur, Eva Walcher, Sorin Grozav, Vasile Ceclan, Numan M. Durakbasa, Dumitru Alexandru Sterca, Study of Improving Spur Gears with the Generative Design Method, ISPR 2022 Conference, 06-08 October 2022, Antalya, Turkey.
7. Mark Kovacs, Razvan-Ioan Pacurar, Sorin Grozav, Numan Durakbasa, Osman Bodur, Jan Rehor, Tomas Marik, Research on Mechanical Characteristics of parts made of 316L Stainless Steel (material) by using Selective Laser Melting Technology, ISPR 2022 Conference, 06-08 October 2022, Antalya, Turkey. 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
8. Simona Sorina GABRIAN, Sorin-Dumitru GROZAV, Gabriel Nicodim CIUȘCĂ, Vasile, Adrian CECLAN, Antoniu TURCU and Stanislav 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/mateconf/201929905010>
9. 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/mateconf/201929904012>
10. 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

Products and technologies:

- Self-locking intramedullary nail for major trauma, such as when intramedullary nailing.
- Seat passenger rail industry.
- Industrial plant RTM for SC VRG Bistrita Company.

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, Iași, 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.

Last updated: January 2023