



CE-PP

ABOUT

The Center of Excellence, Research and Development in Modeling and Numerical Simulation (CE-CDMSN) within the Faculty of Mechanics, was established through the Senate's Decision of the „Dunărea de Jos” University of Galați no. 26025/29.09.2011.

The establishment of the Center of Excellence was carried out within the “Software Endowment Offset Project” carried out by Lockheed Martin Overseas Corporation and Siemens Industry Software through the Romanian OFFSET Authority.

The increase of the research activities in the field of polymer processing imposed the name change to Center of Excellence Polymer Processing CE-PP, established through the Senate's Decision of the „Dunărea de Jos” University of Galați no. 155/10.22.2015.

The main scientific research and technological/experimental development activities carried out within the CE-PP center fit into the fundamental field of Engineering Sciences, the science branch of Mechanical Engineering, Mechatronics, Industrial Engineering and Management.



THE TEAM

Prof. dr. eng. Felicia STAN - **Responsible**

Prof. dr. eng. Cătălin FETECĂU –
Scientific Responsible

The center has 6 full members, 6 associate members and an honorary member, Boris Rubinsky, Professor of the Graduate School, University of California at Berkeley, USA.

OBJECTIVES

The aim of the CE-PP center is in line with the need of the local economic environment, the local labor market, respectively with the Romania's strategic policy of short and medium term economic growth, with the gradual alignment efforts to the requirements and objectives of the European Union policy correlated to the need to increase the capacity and competitiveness of education and research-development-innovation systems, as well as their adaptation to similar systems in the other member states of the European Union. The main objectives of the CE-PP are established in accordance to its main field of activity: polymer processing.

The strategic objective of the CE-PP center is to become one of the reference centers in South-Eastern Romania in terms of the research and development of advanced polymeric materials.

The main aim of the CE-PP Center is to carry out scientific research, innovation and technological development in the field of polymer processing, for the development of high-tech products, promoting sustainable development and ensuring active collaboration between academia and the economy.

Also, CE-PP aims to train the human resources and to provide technical assistance for the development of new products, the improvement of technical and economic performance, applied research, design and the capitalization of innovative technical solutions.



ORGANIZATION & EXPERTISE AREAS

The CE-PP Center is composed of 6 research laboratories that support the assumed research objectives and directions, as follows:

Injection of Thermoplastic Materials

Eco-Nano-technologies, Advanced materials

- Optimization of manufacturing technologies for polymer nano-composite parts in order to replace conventional materials in the automotive, aerospace, prototyping and prosthetics industries.
- Polymeric materials and polymeric nano-composites recycling.
- Development of advanced technologies for obtaining functional materials and nano-composites for transportation, machine building, etc.
- Eco-Nano-technologies, Advanced materials.

Applied Rheology

Rheological characterization of polymeric and composite materials

Electro-Mechanical Testing and Characterization

Electro-mechanical characterization of polymeric and composite materials

- Structure - properties - manufacturing / processing methods correlation.
- Characterization of polymeric nano-composites in order to replace conventional materials in the automotive, aerospace, pro-prototyping and prosthetics industries.

Nano-indentation

Mechanical characterization of polymeric and composite materials

- Mechanical characterization of polymeric materials at a micro and nano-metric scale.
- Micro-, nano-manufacturing.

Numerical Modeling and Simulation

Modeling, analysis and simulation of manufacturing processes

- Product Lifecycle Management (PLM) – Computer-aided design (CAD), Computer-aided manufacturing (CAM),
- Computer-aided engineering (CAE), Product data management (PDM) and Digital manufacturing converge through PLM.
- Assisted design in plastics.
- Numerical modeling and simulation of manufacturing processes.

3D Printing HUB

3D printing technologies, structure - properties - performance correlation

- Development of 3D printing technologies based on polymeric nanocomposites.
- Obtaining filaments from polymeric nanocomposites with carbon/graphene nanotubes.

CONSULTANCY, EXPERTISE AND SERVICES

The CE-PP Center offers a diverse range of consultancy services, expertise and technology transfer for the socio-economic environment, in the fields of:

- Parts manufacture by injection.
- Filaments for 3D printing manufacture.
- Execution of prototypes by 3D printing (thermoplastic extrusion) (conceptual models, functional prototypes, spare parts).
- Determination of the flow index for polymeric/composite materials.
- Artificial thermal aging tests (-40°C - 170°C).
- Determination of the pVT diagrams and viscosity curves by capillary rheology.
- Determination of mechanical characteristics for polymeric/composite materials (traction, 3 and 4 point bending, foils, films).
- Determination of mechanical properties for micro and nanoscale polymeric materials.
- Measurement of electrical properties.
- NX, NASTRAN, Moldflow (injection molds, etc.) Computer-aided design.