



PARTNER PRESENTATION AND INTEREST IN HORIZON EUROPE PARTICIPATION

Name of the organisation	NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT OF ISOTOPIC AND MOLECULAR TECHNOLOGIES - ITIM
Country	Romania
Type of organisation	NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT
Short description	With more than 70 years of tradition in research, ITIM is nowadays involved in a wide area of micro- and nanotechnology. The main focus of our developments is on carbon structures, nano/micro-porous materials, magnetic micro/nanogels, thin films, micro/nano-patterned surfaces, magnetic / semiconducting nanoparticles and clusters, novel polymers / copolymers and micro/nanocomposites based on them, or hybrid nanosystems built on such platforms. The envisaged major practical applicability domains are: environment protection / depollution, health – including nanomedicine, energy and combating climate changes, nanoelectronics, safety and security, information and communication technology, agriculture.
Laboratory/ Faculty Department	Research team: “Alternative energies”
Contact person	Dr. Sorina Garabagiu
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Short description of Laboratory/ Faculty Department involved

The Center for Advanced Research and Technologies for Alternative Energy - CETATEA was created on the basis of a project of the same name, co-financed by the European Regional Development Fund (SOP-ECC), completed in November 2015 and evaluated by the Ministry of European Funds as a "project of success"- [proiectul CETATEA](#).

The research center's activities are grouped on three research topics: multi-source energy cogeneration, Research, methods and techniques for capturing, converting and storing for alternative energies, Quantum engineering applications and Hi-Tech Engineering within the INCDTIM participation in the ATLAS-LHC experimental at CERN, GENEVA.

The **Alternative Energy** team is involved in the topics of Cogeneration of energy from multiple sources and Research, methods and techniques for the capture, conversion and storage for alternative energies. These research topics form the basis of the collaboration with Transylvania Energy Cluster (TREC) in which the institute is a partner, and the Alternative Energy team holds the positions of Project manager.

Main collaborations

INCDTIM (through CETATEA research center) is a member of Transylvania Energy Cluster (TREC), Cluj, Romania, and actively collaborates with the members of this cluster.

Collaboration with Green Energy Institute (GEI), Mokpo, South Korea, in the field of photovoltaic, agro-photovoltaic cells (transparent solar panels for the ease of agricultural crops under panels), wind energy, energy storage, micro-networks green energy systems and their management.

Collaboration with ROMBAT S.A, Bistrița, Romania, for the development of the research / technological development activity in the field of lead-acid accumulators, the access of ROMBAT S.A to the research infrastructure of INCDTIM-CETATEA, mutual support for attracting research-development funds.

Collaboration with Universite Catholique de Louvain - Institute of Condensed Matter and Nanosciences, Louvain, Belgium. The theme of the collaboration is: the study and management of energy storage systems, the study of Li-ion batteries, the study of Lead-Acid batteries.

Collaboration with the Institute de Physic du Glob de Paris (IPGP), France; the collaboration theme refers to convection experiments in geological researches based on non-contact microwave heating (TERRA-MWH)

Projects founded by EU contribution

REFLOW project - Project Horizon H2020-SC5-2018-2, ConstRuctive mEtabolic processes. For material FLOWs in urban and peri-urban environments across Europe, <https://reflowproject.eu/>. Through the REFLOW project, models will be developed in 6 European cities (Cluj-Napoca, Amsterdam, Berlin, Milan, Paris and Vejle) that will evaluate the ways of implementing the circular economy in different fields, while also evaluating the impact of these models on a social level, economic and environmental issues.

CITAT-E project " Innovative cluster for pilot technologies in advanced alternative energy " in progress (<https://www.itim-cj.ro/poc/citat-e/>) in partnership with Cluj Napoca City Hall and two private entities, Cluj Innovation Park company and Transylvania Energy Cluster (TREC)-Cluj Napoca

ROADMAP 2021 CETATEA research infrastructure is included in Romania Roadmap 2021 through the MICROGRID CENTRE FOR ALTERNATIVE ENERGY SOURCES (CEMSAL)

Involved persons. Short CV

Dr. Sorina Garabagiu (<https://www.brainmap.ro/sorina-garabagiu>) has received its PhD in 2012, with the thesis entitled "*Metallic nanostructures with applications in the detection of some bio-molecules*", at Babes-Bolyai Univesity in Cluj-Napoca. She is currently Scientific Researcher III in CETATEA Research Centre from INCDTIM. Her research interest is in thermoelectric materials, PLD (pulsed laser deposition) and the design of thermoelectric devices. She has expertise in the fabrication of metal/oxides nanocomposite thin films using sputtering techniques and/or electrodeposition, and their characterization, in the design of various devices used for the characterization of thin films and the synthesis and characterization of noble metal nanostructures with various sizes and shapes. She has published 19 ISI papers (Hirsch: 8), and was member in several national projects.

Dr. Radu Gavrea (<https://www.brainmap.ro/dr-radu-cristian-gavrea>) has recently obtained his PhD, with the thesis entitled "*Structural, magnetic and electronic properties of Mn-Based Alloys with applications in advanced technologies*". He has **expertise in the experimental techniques concerning sample preparation** (arc and induction melting, mechanical milling/alloying, solid state reactions, heat treatments etc.) and the investigation of different properties of materials (structural, magnetic, electrical and thermal analysis). His current research focus in the Centre for Advanced Research and Technologies for Alternative Energy – CETATEA is on the **refinement, design, and discovery of novel materials**, particularly solids, to use in **Renewable Energy Technology** applications, and the design of innovative devices for Renewable Energy Technologies based on the materials investigated in our laboratories.

Dr. Mioara Zagrai (U-1700-039N-2013), 41 years old, PhD in Environmental Engineering (2018) - Technical University, Cluj-Napoca, is Research Scientist III at INCDTIM, Cluj-Napoca. Her research expertise in the field of material science focusses on design and development of advanced materials: glasses, glasses-ceramics and ceramics for applications in vary field of modern technology from environmental protection and energy storage, to optoelectronic device and medical applications. The investigations of the structural and behavioral properties of processed amorphous/crystalline systems is based on structural (XRD, FTIR, UV-Vis, EPR and PL spectroscopy), mechanical (Micro Vickers Hardness Tester), thermal (DSC) and electrochemical analysis (CV). The visibility and the impact of the scientific contribution in the field are reflected in: 12 ISI articles, 77 citations, 6 Hirsch index, 1 patent and coordination of 2 research projects: PN-III-P1-1.1-MC-2017-2180 - The investigation by modern methods of a structure-luminescence properties interrelationship in the vitreous systems based on lead and doped with europium ions, and PN-III-P1-1.1-PD2021-0721 / PD188/2022 - Advanced Glasses and Glass-Ceramics Waste forms for Efficient Radionuclides Incorporation.

If you are interested in a particular call, please indicate the Reference of the call/ Topic of interest—potential contribution.

Have you already participated in an EU funded project? If so, provide some references.

Project COST - MP1308COST Action TO-BE "Towards Oxide-Based Electronics"

Project COST - OC-2020-1-24657 OPERA "European Network for Innovative and Advanced Epitaxy"