

Laboratory 2: Chemical Thermodynamics

GRANTS / INTERNATIONAL COOPERATION

• Projects type: H2020 Program

Program H2020-NMBP-TO-IND-2018-2020 (FOUNDATIONS FOR TOMORROW'S INDUSTRY), **Topic: DT-NMBP-02-2018, Type of action: IA**

“Safety testing in the life cycle of nanotechnology-enabled medical technologies for health (SAFE-N-MEDTECH)”, Grant nr. 814607/**2019-2023**, , Scientific Responsible Dr. Speranta Tanasescu.

Program H2020- EURONANOMED III

JOINT TRANSNATIONAL CALL FOR PROPOSALS (2018) FOR **“EUROPEAN INNOVATIVE RESEARCH & TECHNOLOGICAL DEVELOPMENT PROJECTS IN NANOMEDICINE”** *“Targeted multifunctional nanoemulsions to interrupt metastatic progression (METASTARG)”* Grant nr. 90/**2019-2022**, responsabil științific Dr. Speranța Tănăsescu.

Program H2020-NMP-2014-two-stage, RIA

“Development and implementation of Grouping and Safe-by-Design approaches within regulatory frameworks (NANOREG II)” Agreement number: 646221/**2015-2020**, Scientific Responsible ICF: Dr. Speranta Tanasescu, Leader of WP.

Program H2020-NMP-2014-CSA

“Promoting the Implementation of Safe by Design (PROSAFE)” Agreement number: 646325/**2015-2017**, , Scientific Responsible ICF: Dr. Speranta Tanasescu.

• Projects type: FP5, FP6, FP7 programs

2013–2010, FP7 Program – NMP.2010.4-0-7 ERA-NET on nanotechnologies, including nanotoxicology, SIIN ERA-NET, *“Safe Implementation of Innovative Nanoscience and Nanotechnology”*, Dr. Speranta Tanasescu, Leader of WP.

2008–2005, FP6 Program - NMP4-CT-2005-013968, *“Improving the understanding of the impact of nanoparticles on human health and the environment”*, ImPart CA, Dr. Speranta Tanasescu, Scientific Responsible

1995–1993, FP5 Program, PECO-JOULE II, Subprogramul Energy Conservation and Utilisation, Contr. JOU 2-CT 92-0063 Proiectul de cercetare intitulat *“New SOFC Materials and Technology”*, Dr. Speranta Tanasescu, Scientific Responsible

• Projects type: SCOPES

2012–2009: *“Mixed Ionic and Electronic Conducting Perovskites”*, Programul SCOPES, nr. IZ73ZO_128185 /1, **2009-2012**, Collaboration with Switzerland and Georgia, Co-director Project: Dr. Speranta Tanasescu

• COST Actions

2013–2010, COST Action MP0903, “*Nanocalloys as advanced materials: from structure to properties and applications (NANOALLOY)*”, Dr. Speranta Tanasescu, member of management committee

2010–2007, COST Action MP06020, “*Design, process and control in a multiscale domain of Cu-Ni-X-Y (X,Y=Sn, Bi, Zn, Ti) based alloys*” in cadrul European Concerted Action on Advanced Solder Materials for High Temperature Application (HISOLD), Dr. Speranta Tanasescu.

2005–2004, COST Action 525: Advanced Electroceramics: Grain Boundary Engineering, the Project “*Structural and dielectric studies of incipient ferroelectrics*”, Dr. Speranta Tanasescu.

INTERNATIONAL COLLABORATION / INTERACADEMIC COLLABORATION

• Research Collaboration Agreement with Paul Scherrer Institute, Research Division Energy and Environment, Group of Chemical Processes and Materials, Villigen, Switzerland, **2019-2025** Scientific Responsible Dr. Florentina Maxim

• Joint Research Project: cod - AR-HAS **2018-2021**, “*Structural and thermodynamic studies of aqueous solutions*”, Romanian Academy- Hungarian Academy of Sciences, Institute for Energy Security and Environmental Safety, Centre for Energy Research, Budapest, Hungary. Scientific Responsible ICF: Dr. Dana Dragoescu, Team Member: Dr. Florinela Sirbu.

• Joint Research Project: cod - AR–FRBCF **2020-2021**, “*A comparative study of the thermophysical properties for binary mixtures of cycloalkanes and cycloketones with aromatic hydrocarbons*”; Romanian Academy and National Academy of Sciences of Belarus, Belarusian Republican Foundation for Fundamental Research and Mogilev State University of Food Technologies (MSUFT), Department of Heat and Refrigerating Engineering, Mogilev, Belarus. Scientific Responsible ICF: Dr. Dana Dragoescu, Team Member: Dr. Florinela Sirbu.

• Joint Research Project: cod - AR–FRBCF **2018-2019**, “*Study of thermophysical properties for mixtures of 1-chlorohexane with hydrocarbons from different classes*”; Romanian Academy and National Academy of Sciences of Belarus, Belarusian Republican Foundation for Fundamental Research and Mogilev State University of Food Technologies (MSUFT), Department of Heat and Refrigerating Engineering, Mogilev, Belarus. Scientific Responsible ICF: Dr. Dana Dragoescu, Team Members: Dr. Florinela Sirbu.

• Joint Research Project: cod- AR–FRBCF **2016-2017**, “*Thermophysical properties of molecular liquid mixtures*”; Romanian Academy and National Academy of Sciences of Belarus, Belarusian Republican Foundation for Fundamental Research and Mogilev State University of Food Technologies (MSUFT), Department of Heat and Refrigerating Engineering, Mogilev, Belarus. Scientific Responsible ic ICF: Dr. Dana Dragoescu, Team Members: Dr. Florinela Sirbu, Dr. Anamaria Popescu, Dr. Virgil Constantin.

• Collaboration with the Department of Chemical Engineering and Materials Science at the University of California, Davis (Professor Alexandra Navrotsky) in the frame of DOE Grant

Number: DE-FG02-03ER46053: *Thermochemistry of Oxides with Electrochemical and Energy Applications*, **2012-2015**, Scientific Responsible ICF: Dr. Speranta Tanasescu and Dr. Cornelia Marinescu.

- Scientific cooperation and interacademic collaboration with Institute of Chemical Process Fundamentals - Prague (Czech Republic), “Eduard Hala“ Laboratory of Separation Processes “*Phase equilibria in molecular and ionic liquid systems*” **2014**, Scientific Responsible ICF: Dr. Speranta Tanasescu, Team Members: Dr. Dana Dragoescu.
- Scientific cooperation and interacademic collaboration with Institute of Chemical Process Fundamentals - Prague (Czech Republic), “Eduard Hala“ Laboratory of Thermodynamics, “*Phase equilibria in molecular and ionic liquid systems*” **2009-2013**, Scientific Responsible ICF: Dr. Speranta Tanasescu, Team Members: Dr. Dana Dragoescu, Daniela Gheorghe.
- Scientific cooperation and interacademic collaboration with the Institute of Metallurgy and Materials Science “Aleksander Krupkowski” of the Polish Academy of Sciences, Laboratory of Physical Chemistry concerning “*The investigation of the influence of phase nonstoichiometry on phase equilibria in Mn-Eu-O system*”. Agreement on cooperation **2002-2004** and JRC Project **2003-2006**, Scientific Responsible ICF: Dr. Speranta Tanasescu.
- Scientific cooperation with ETH Zürich, Department of Materials-Institute of Nonmetallic Materials, Thermodynamic Group, Switzerland concerning “*The thermochemical properties of the compounds in the La-Sr-Mn-O system*”. Scientific Responsible ICF: Dr. Speranta Tanasescu Agreement on the scientific collaboration **2001-2003**.

INTERNATIONAL COLLABORATION / MEMBERS OF INTERNATIONAL PROFESSIONAL ASSOCIATIONS

- Member (Dr. Speranta Tanasescu member 2017- present) of the Thermodynamics Consortium (Thermocon) first established at UC Davis in 2017 and coordinated in present by Arizona State University, US (Alexandra Navrotsky).
- Member (Dr. Speranta Tanasescu) of the European Platform of Nanomedicine (ETP-Nanomedicine) (beginning with 2006) representing the Institute of Physical Chemistry at the Annual Meetings and Conferences as well as to the activities of “Nanosafety and Characterization” Working Group.
- Member of the Associated Phase Diagram and Thermodynamics Committee (APDTC-Poland, Bosnia&Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Montenegro, Romania, Serbia, Slovenia, Slovakia), beginning with 2003. Contact point from Romania: Dr. Speranta Tanasescu. ORGANIZED Xth Workshop and Meeting of the Associated Phase Diagram and Thermodynamics Committee, Bucharest, 28-30 Sept. 2007.
- Member of the NanoSafety Cluster (NSC): Dr. S. Tanasescu (2019-2023)

GRANTS / NATIONAL COOPERATION

PN-III-P4-ID-PCE-2020-1241, “*Carbon supported metal oxides produced by supercritical*

water impregnation method – (APASUPER)”, Contract nr. 111/2021, **2021-2023** Project Director Dr. Florentina Violeta Maxim.

PN-II-PT-PCCA-2013-4-2094, “*Cercetarea substitutiei osoase cu materiale biocompozite fabricate prin tehnici specifice metalurgiei pulberilor (BONY)*”, Contract nr. 244/2014, **2014-2016**, Scientific Responsible Dr. Speranta Tanasescu.

PN-II-RU-TE-2011-3-0160, “*NanoPerovskites in one-dimension: synthesis, structure, properties*”, Contract nr. 92/2011, **2012-2015**, Project Director Dr. Florentina Violeta Maxim.

Programul POS-CCE, PRIORITY AXIS 2– RD&I: Operation 2.2.1&Program Capacities, MODULE I: Large investment projects: “*Modernizing the research and development infrastructure within the „Ilie Murgulescu” Physical Chemistry Institute of the Romanian Academy in the field of nanomaterials and nanotechnologies*” (INFRANANOCHEM) (*Modernizarea infrastructurii de cercetare - dezvoltare in cadrul institutului de chimie fizică „Ilie Murgulescu” al Academiei Române pentru extinderea cercetărilor interdisciplinare in domeniul nanomaterialelor si nanotehnologiilor/ INFRANANOCHEM*)”, Contract nr. 91/2009, **2009-2011**, Project Director: Dr. Vlad T. Popa, (Members in the Management team: Dr. Speranta Tanasescu, Dr. Dan Anghel, Dr. Marieta Balcan, Dr. Victor Fruth).

IMPACT/POS-CCE, 2009-2011, “*Development of the research infrastructure in the field of Applied Chemical Thermodynamics and Thermochemistry*” (*Dezvoltarea infrastructurii de cercetare in domeniul Termochimiei si Termodinamicii Chimice Aplicate*) (ACTherm)”, Project Director Dr. Tanasescu Speranta.

PNC DI – PARTENERIATE, Contract nr. 72-184/**2008-2011**, “*New technological concepts regarding the development of nanomaterials with low impact on the environment*”, Project Director Dr. Tanasescu Speranta.

PNC DI – IDEI (Cercetare exploratorie), Contract nr. 50/**2007-2010**, “*Controlling the stability and reactivity of micro and nanostructured multifunctional materials based on a complex thermodynamic approach*”, Project Director Dr. Tanasescu Speranta.

CEEX– Matnantech Program, Contract nr. 94/**2006-2008**, “*The influence of composition and structure on the thermodynamic, electrical and magnetic characteristics of micro and nanostructured oxide materials with special magnetoresistive properties (Acronim CMR-TEM)*”, Project Director Dr. Tanasescu Speranta.

CEEX– Relansin Program, Contract nr. 290/**2006-2008**, “*Research network for the development of functionally graded nanostructured composite materials for magnetic sensors and thermal coatings barriers*” (*Retea de cercetare pentru dezvoltarea materialelor compozite nanostructurate cu gradient functional pentru senzori magnetici si bariere termice de acoperire*) (Acronim NANOGRAF)”, Responsabil stiintific Dr. Speranta Tanasescu.

Grant CNCSIS, Contract nr. 18/**2007-2008**, “*Research on the correlation between thermodynamic properties, structural defects and magnetoresistive characteristics of micro and nanostructured lanthanum manganites*”, Project Director Dr. Tanasescu Speranta.

Program PNII – TD, Contract nr. 54/2007, “*The theoretical and experimental thermodynamic study of some oxide compounds of transition metals with rare earth elements*”, 2007-2008, Project Director Cornelia Marinescu.

Grant Academia Romana, GAR Nr. 54/2008, “*The foundation of separation processes through the systematic study of phase equilibria in organic solvent systems and the development of thermodynamic models of solutions*”. (Experimental studies of equilibria between phases, densities and refractive indices in systems of cyclohexanone + chloroalkanes. Correlation of experimental data obtained with classic models of solutions and verification of some models of group contributions for the prediction of equilibria between phases and of excess thermodynamic quantities in systems of chloroalkanes with cyclic ketones), Director de proiect: Dr. Mariana Teodorescu.

Grant Academia Romana, GAR nr. 47/2008, “*The study of compounds of biological interest by differential scanning calorimetry and electronic spin resonance*”, Project Director Dr. Iulia Contineanu.

Grant Academia Romana, GAR nr. 58/2007, “*The role of thermodynamic parameters in controlling the stability and reactivity of micro and nanostructured multifunctional oxide materials*”, Project Director Dr. Tanasescu Speranta.

Grant Academia Romana, GAR nr. 50/2007, “*The study of compounds of biological interest by differential scanning calorimetry and electronic spin resonance*”, Project Director Dr. Iulia Contineanu.

Grant Academia Romana, GAR Nr. 57/2007, “*The foundation of separation processes through the systematic study of phase equilibria in organic solvent systems and the development of thermodynamic models of solutions*”. (Experimental measurements of equilibria between phases, densities and refractive indices in systems of cyclopentanone and cyclohexanone with chloroalkanes and the correlation of the experimental data obtained with classical models of the solutions), Project Director: Dr. Mariana Teodorescu.

Grant Academia Romana, GAR Nr. 48/2006, “*The study of phase equilibria and thermodynamic properties of excess in selected systems of organic compounds*”. (Liquid-vapor equilibria and thermodynamic properties of excess in binary systems of cycloketones + chloroalkanes in order to extend the DISQUAC and UNIFAC group contribution models), Project Director: Dr. Alexandru Bârhală.

Grant Academia Romana, GAR Nr. 52/2005, “*The study of phase equilibria and thermodynamic properties of excess in selected systems of organic compounds*”. (Measurements of liquid-vapor equilibria, densities and refractive indices and correlation of experimental data for binary systems of cyclopentanone / cyclohexanone + chloroalkanes), Project Director: Dr. Alexandru Bârhală.