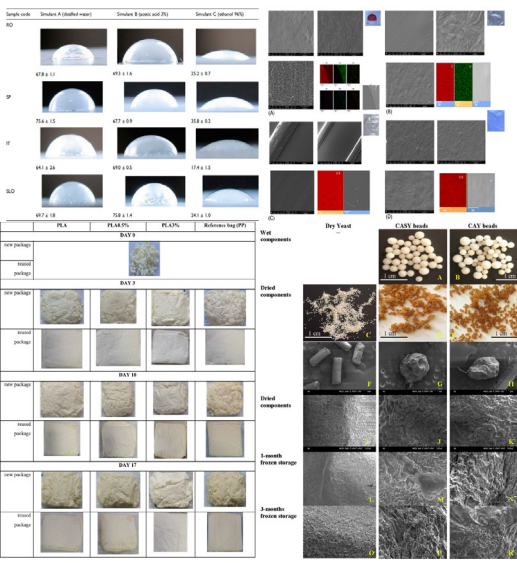



**CENTER OF SCIENTIFIC RESEARCH OF ENVIRONMENT, FOOD AND HEALTH SAFETY- CCESMAS  
PHYSICAL-CHEMICAL ANALYSIS**

**Contact details**

Name	Center of Scientific Research of Environment, Food and Health Safety- Physical-Chemical Analysis	
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Logo		
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**Areas of expertise**

**Food safety and quality:** • Food control; • Functional food; • Food packaging  
**Environment:** • Environment monitoring: wastes, organic and inorganic pollutants from different matrices • Recovery of valuable metals from different wastes (including also the mining water wastes)  
**Science of material:** • Nanomaterials based on titania, silica and noble metals: preparation, characterization and applications in depollution, recovery of metals, self cleaning, food preservation, etc...  
**Chemometry:** • Statistically processing the experimental data; • Mathematical modelling of experimental data

**Team**



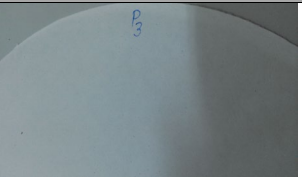
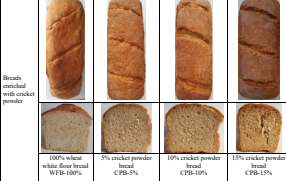
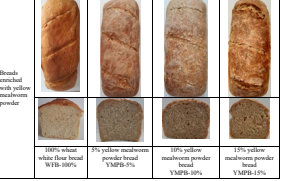
**Prof. Dr. Eng. Anca Mihaly Cozmuta (coordinator)**, Associate Prof. Dr. Camelia Nicula, Associate Prof. Dr. Anca Peter, Associate Prof. Dr. Eng. Leonard Mihaly Cozmuta

**Representative projects**

**FOODCHAIN4EUROPE - HIGH QUALITY FOOD CHAIN 4 EUROPE – INTERREG IV (2017-2022)**  
**GRAFOOD – “Active GRAphene based FOOD packaging systems for a modern society”,** PNIII-P3-3.2 COFUND-M-ERA.NET II-GRAFOOD, (2017-2020)  
**STRUCTural and PHOtochemical investigations of a nanosized composite as active component of paper based PACKAGE designed for food applications (STRUCT-PHO-PACK) – Romania-Russia bilateral projects; 2017-2018.** 4517-3-16/18; 01-3-1115-2014/2018  
**SMARTPACK-“Smart functions of packages containing nano-structured materials in food preservation”,** (2012-2015)  
**DAC, “Analysis and physically-chemically characterization of liquid and solid samples”,** (2012-2014)  
**RIVAM, “Rehabilitation of tailings ponds by application of amendments and cultivation of vegetal species with high adaptability to the heavy metals”,** <http://chimie-biologie.ubm.ro/RIVAM/> (2008-2011)  
**BIOMEG, “Bioaccumulation of heavy metals in soil-vegetables-human chain”,** <http://chimie-biologie.ubm.ro/biomeg/index.html> (2008-2011)  
**SIG, “Designing the hazards charts and environment assessment in mining areas of Maramures and Satu Mare counties using GIS”,** (2005-2008)  
**ZEMIP, “Developing of a biophysical system based on zeolites-microorganisms-vegetal species for ecoremediation of tailing ponds coming from gold-silver preparation industry”,** <http://chimie-biologie.ubm.ro/zemip/> (2009-2011)

**Significant results**

**Active packages for food industry**

		
Polypropylene flask modified with Ag/TiO <sub>2</sub> -based nanocomposite	Polypropylene flask modified with Au/TiO <sub>2</sub> – based nanocomposite	Paper sheet modified with Ag/TiO <sub>2</sub> nanocomposite
		
Bread fortified with cricket powder	Bread fortified with yellow mealworm powder	

**The most representative publications of the past 5 years**

1. A. Mihaly Cozmuta, C. Nicula, A. Peter, L. Mihaly Cozmuta, A. Nartea, A. Kuhalskaya, D. Pacetti, S. Silvi, D. Fiorini, L. Pruteanu (2022). Cricket and yellow mealworm powders promote higher bioaccessible fractions of mineral elements in functional bread. *Journal of Functional Foods* 99 (2022) 105310
2. L. Mihaly Cozmuta, C. Nicula, A. Peter, R. Apjok, A. Jastrzębska, A. Mihaly Cozmuta (2022). Insights into the fermentation process of fresh and frozen dough bread made with alginate-immobilized *S. cerevisiae* yeast cells. *Journal of Cereal Science* 107 (2022) 103516
3. A. Peter, L. Mihaly Cozmuta, C. Nicula, A. Mihaly Cozmuta, G. Drazic, A. Peñas, F. Kamgang Nzekoue, X. Huang, G. Sagratini, S. Silvi (2022). Storage of chicken breast meat in paper coated with different types of hydrophobic agents. *Packaging Technology and Science*. <https://doi.org/10.1002/pts.2694>
4. A. Peter, L. Mihaly Cozmuta, C. Nicula, A. Mihaly Cozmuta, R. Apjok, C. M Talasman, G. Drazic, A. Peñas, A.J Calahorro, F. Kamgang Nzekoue, X. Huang, G Sagratini, S. Silvi (2022). Barrier properties, migration into the food simulants and antimicrobial activity of paper-based materials with functionalized surface, *Polymers and polymer composites*, 30, 1-12.
5. A. Mihaly Cozmuta, A. Jastrzębska, R. Apjok, M. Petrus, L. Mihaly Cozmuta, A. Peter, C. Nicula. Immobilization of baker's yeast in the alginate-based hydrogels to impart sensorial characteristics to frozen dough bread. *Food Bioscience* 42 (2021) 101143
6. A Peter, L Mihaly Cozmuta, C Nicula, A Mihaly Cozmuta, R Apjok, CM Talasman, G Drazic, A Penas, AJ Calahorro, F Kamgang Nzekoue, X Huang, G Sagratini, S Silvi. Morpho-structural and chemical characterization of paper based materials with functionalized surface, *Materials Chemistry and Physics* 267 (2021) 124693
7. Anca Peter, Leonard Mihaly Cozmuta, Camelia Nicula, Anca Mihaly Cozmuta, Catalina Mihaela Talasman, Goran Drazic, Antonio Peñas, Antonio Jesús Calahorro, Gianni Sagratini, Stefania Silvi. Chemical and organoleptic changes of curd cheese stored in new and reused active packaging systems made of Ag-graphene-TiO<sub>2</sub>-PLA. *Food Chemistry* 363 (2021) 130341.
8. Anca Peter, Leonard Mihaly Cozmuta, Camelia Nicula, Anca Mihaly Cozmuta, Catalina Mihaela Talasman, Goran Drazic, Marjan Bele, Alen Vizintin, Elena Tchernychova, Antonio Peñas, Antonio Jesús Calahorro, Gianni Sagratini, Stefania Silvi, Modifying the silver-titania nanocomposites with carbonaceous materials to remove the pollutants from domestic waste water, *Journal of Nanoscience and Nanotechnology*, 2021, doi:10.1166/jnn.2020.18960.
9. A. Mihaly Cozmuta, A. Peter, L. Mihaly Cozmuta, C. Nicula, R. Apjok, G. Drazic, F. Kamgang Nzekoue, X. Huang, S. Silvi, G. Sagratini, A. Peñas, A. J. Calahorro, M. Cano-Galey, O. Hodek - Impact of packaging properties on the physical-chemical-microbiological-sensory characteristics of Ricotta cheese during storage, *Packaging Technology and Science*, 33 (1), 27-37, 2020, doi: 10.1002/pts.2482

**Patent:**

Methods to obtain intelligent packages containing nano-structured materials used in food preservation -European patent, filing No. 1023377/ 28.08.2015

**The offer addressed to the economic environment**

Research & development	Pollution monitoring; and rehabilitation of polluted areas; Physical-chemical control and expertise of food; Food packaging; Functional foods; Nanomaterials: preparation, characterization, application; Recovery of valuable metals (Au, Ag, Cu) from wastes; Waste waters treatment;
Consulting	Technologies for remediation of polluted soils; Technologies for recovery of valuable metals from wastes (Cu, Au, Ag); Food packaging; Food quality and safety;
Applied engineering services	Technologies for remediation of polluted soils and 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;

Last updated: January 2023