

RESEARCH LABORATORY FOR COMPOSITE MATERIALS AND ENVIRONMENTAL CHEMISTRY

Contact details

Name	Research Laboratory for Composite Materials and Environmental Chemistry	
Acronym	CMEC	
Logo		
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Faculty Department	Faculty of Materials and Environmental Engineering Physics and Chemistry Department	
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Areas of expertise

Materials science and engineering: oxides, sulphides, polymeric materials, biomaterials, polymers recycling, nanomaterials;

Environment science and engineering: pollutants separation and degradation trough adsorption or photodegradation;

Team

Prof. PhD. eng. Violeta POPESCU, Lecturer Ph.D. eng. George Liviu POPESCU, Ph.D. Eng. Pompilia LOPES, PhD. Liviu MARE, PhD.eng. Felicia MINTEUAN, Ph.D. Valentina Mariana SICOE

Representative projects

DISDENT – “Noi materiale pentru tratamentul minim invaziv al cariei dentare incipiente și al petelor albe” PN-III-P2-2.1-PED2019-2953/13.08.2020 (2020 – 2022)
 ENZIPLAST – “The Optimization of the Obtaining Process of the Amino-Acids Chelates for Obtaining of New Materials with New Applications”, PNIII-P2-2.1 BG-2016-0204, (2016-2018), <https://sites.google.com/site/112bg2016enziplast/>
 COMBREG, “Research related to the obtaining of fuels and raw materials from renewable sources. The project aims to develop methods for organic waste materials recycling”

Significant results

The most representative publications of the past 5 years:

- Mare, L.; Muresan-Pop, M.; Purcea Lopes, P.M.; Turza, A.; Borodi, G.; Popescu, V. Crystal Structure and Intermolecular Energy for Some Nandrolone Esters. *Molecules* **2023**, *28*, 7179.
- Purcea Lopes, P.M.; Moldovan, D.; Fechete, R.; Mare, L.; Barbu-Tudoran, L.; Sechel, N.; Popescu, V. Characterization of a Graphene Oxide-Reinforced Whey Hydrogel as an Eco-Friendly Absorbent for Food Packaging. *Gels* **2023**, *9*, 298.
- Turza, A.; Pascuta, P.; Mare, L.; Borodi, G.; Popescu, V. Structural Insights and Intermolecular Energy for Some Medium and Long-Chain Testosterone Esters. *Molecules* **2023**, *28*, doi:10.3390/molecules28073097.
- Popescu, V.; Prodan, D.; Cuc, S.; Saroși, C.; Furtos, G.; Moldovan, A.; Carpa, R.; Bomboș, D. Antimicrobial Poly (Lactic Acid)/Copper Nanocomposites for Food Packaging Materials. *Materials* **2023**, *16*, 1415.
- Lopes, P.M.P.; Moldovan, D.; Fechete, R.; Prodan, D.; Pop, C.R.; Rotar, A.M.; Popescu, V. Swelling and Antimicrobial Activity Characterization of a GO-Reinforced Gelatin—Whey Hydrogel. *Gels* **2022**, *9*, 18.
- Turza, A.; Popescu, V.; Mare, L.; Borodi, G. Structural Aspects and Intermolecular Energy for Some Short Testosterone Esters. *Materials* **2022**, *15*, 7245.
- Purcea Lopes, P.M.; Moldovan, D.; Moldovan, M.; Carpa, R.; Saroși, C.; Pășcuță, P.; Mazilu Moldovan, A.;

Fechete, R.; Popescu, V. New Composite Hydrogel Based on Whey and Gelatin Crosslinked with Copper Sulphate. *Materials* 2022, 15, 2611.

8. Mazilu Moldovan, A.; Popescu, V.; Ionescu, C.V.; Cuc, S.; Craciun, A.; Moldovan, M.; Ducea, D.; Mesaros, A.S. Various Aspects Involved in the Study of Tooth Bleaching Procedure: A Questionnaire-Based Study. *International journal of environmental research and public health* 2022, 19, 3977.
9. Popescu, V.; Sarosi, C.; Dumitrescu, R.S.; Chisnoiu, A.M.; Moldovan, M.; Dumitrescu, L.S.; Prodan, D.; Carpa, R.; Gheorghe, G.F.; Chisnoiu, R.M. Preparation and In Vitro Characterization of Gels Based on Bromelain, Whey and Quince Extract. *Gels* 2021, 7, 191.
10. Popescu, V.; Molea, A.; Moldovan, M.; Lopes, P.M.; Mazilu Moldovan, A.; Popescu, G.L. The Influence of Enzymatic Hydrolysis of Whey Proteins on the Properties of Gelatin-Whey Composite Hydrogels. *Materials* 2021, 14, 3507.
11. Dascalu (Rusu), L.M.; Moldovan, M.; Prodan, D.; Ciotlaus, I.; Popescu, V.; Baldea, I.; Carpa, R.; Sava, S.; Chifor, R.; Badea, M.E. Assessment and Characterization of Some New Photosensitizers for Antimicrobial Photodynamic Therapy (APDT). *Materials* 2020, 13, doi:10.3390/ma13133012.
12. Voina, C.; Delean, A.; Muresan, A.; Valeanu, M.; Moldovan, A.M.; Popescu, V.; Petean, I.; Ene, R.; Moldovan, M.; Pandrea, S. Antimicrobial Activity and the Effect of Green Tea Experimental Gels on Teeth Surfaces. *Coatings* 2020, 10, doi:10.3390/COATINGS10060537.
13. Voina, C.; Muresan, A.; Delean, A.; Moldovan, A.I.; Popescu, V.; Prodan, D.; Petean, I.; Voina-Tonea, A.; Valeanu, M. The Effects of an Experimental Green Tea Extract Gel on the Surface Roughness of Bleached Teeth with Carbamide Peroxide Gels. *Revista de Chimie* 2020, 71, 312–320, doi:10.37358/RC.20.6.8197.
14. Gheorghe, M.; Popescu, G.L.; Prodan, D.; Cojocaru, I.; Groza, M. Study of Some Soil Properties and Evaluation of the Level of Contamination with Lead in Baia Mare, Aghires and Copsa-Mica, Romania. *REVISTA DE CHIMIE* 2019, 70, 801–804.
15. Mazilu, A.; Sarosi, C.; Moldovan, M.; Miuta, F.; Prodan, D.; Antoniac, A.; Prejmerean, C.; Dumitrescu, L.S.; Popescu, V.; Raiciu, A.D.; et al. Preparation and Characterization of Natural Bleaching Gels Used in Cosmetic Dentistry. *Materials* 2019, 12, doi:10.3390/ma12132106.
16. Violeta Popescu, M.M., Codruta Sarosi, Mihaela Vlassa, George Liviu Popescu, Elena David, Diana, Cojocaru Ileana, Doina Prodan The Identification of Branched-Chain Amino Acids and the Testing of the Antibacterial Effect of Whey and Soy Protein Powders.; 2019; Vol. 21, p. 150.
17. Marioara Moldovan, D.P., Codruta Sarosi, George Popescu, Amalia-Ionela Mazilu (Moldovan), Violeta Popescu Evaluation of Colour Modifications and Surface Morphology of Dental Composite.; 2019; Vol. 21, p. 148.
18. Prică, C.-V.; Marinca, T.F.; Neamțu, B.-V.; Popa, F.; Popescu, V.; Chicinaș, I. Structural and Thermal Investigation of Ta–25 Mass% Cu Alloy Prepared by Mechanosynthesis Route. *Journal of Thermal Analysis and Calorimetry* 2019, 136, 995–1001, doi:10.1007/s10973-018-7816-4.

Activity with undergraduate students: More than 24 graduation thesis or dissertation.

Activity with PhD students. Research activity with 14 PhD students: 10 with finalized thesis and 4 in progress.

Activity with postdoctoral students. Research activity of 2 postdoctoral students.

Patent no. RO 127718/2015. M. Moldovan, L. Silaghi-Dumitrescu, G. Furtoș, H. Iovu, C. Petrea, V. Popescu, C. Saroși, S. Boboia, M. Filip, A.L. Colceriu Burtea, R.L. Silaghi-Dumitrescu. Compoziție endodontică pentru obturarea și sigilarea canalelor radiculare.

Patent no. RO128800-A2; RO128800/2017. Prejmerean C, Moldovan M, Prodan D, Silaghi D L, Furtos G, Iovu H, Petrea C, Popescu V, Pascalau V, Sarosi C, Boboia S, Filip M, Colceriu B A L, Silaghi D R L, Damian C M, Sarosi L C, Matrice organică și compozit de restaurare indirectă pentru utilizare în stomatologie.

Products

1. IR photosensitive PbS films; semiconducting PbS, CuS, CdS, TiO₂, ZnO, Fe₂O₃ films and powders.
2. Fuels from plastic waste.
3. Biodegradable plastic materials.
4. Diverse natural extracts.

The offer addressed to the economic environment.

Research & development	The correlation between optical, structural and morphological properties of semiconductors. The obtaining of materials with photocatalytic properties. Chemical recycling of plastic materials. Fuels obtaining, characterization and testing.
Consulting	FT-IR and UV-VIS spectroscopy. Plastic materials characterization and recycling.
Training	Rapid identification of organic compounds by IR spectroscopy using ATR-FTIR. Elaboration of UV-VIS spectroscopic quantitative analysis methods. Polymers recycling.

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