

“New nanostructured vitreous systems with possible application in the immobilization of nuclear wastes”, (2009-2011), PNII-Idei-183/2009: https://phys.utcluj.ro/resurse/Cercetare/PNII_ID_183_2009_Eng.htm

“Obtaining and characterization of physical and structural properties of some new glasses and glass ceramics doped with 3d and 4f ions with possible applications in electronics and telecommunication”, (2009-2011) PNII-IDEI-532/ 2009, https://phys.utcluj.ro/resurse/Cercetare/PNII_ID_532_2009_En.html

“New tellurate and germanate vitreous systems with applications in telecommunications”, (2007-2010): Parteneriate, https://phys.utcluj.ro/resurse/Cercetare/CNMP_71099_2007.html

MATNANTECH - “Clustering processes in oxide vitreous systems with 4f ions”, (2006-2009) CEEX 47/2006, http://www.phys.utcluj.ro/resurse/Cercetare/CEEX_47_2006.html.

“Nanostructured phases in vitreous systems with 4f ions”, CEEX POSTDOC 1546/2006, http://www.phys.utcluj.ro/resurse/Cercetare/CEEX_1546_2006.html (2006-2009).

Significant results

The most representative publications of the past 5 years:

1. K. H. Tan, D. E. Demco, R. Fechete, A. Pich, Functional selenium modified microgels: temperature-induced phase transitions and network morphology, *Soft matter*, 15 (15), 3227-3240 (2019).
2. M. Rada, A. Popa, S. Rada, A. Bot, E. Culea, Recycled and vanadium-doped materials as negative electrode of the lead acid battery, *J. Sol. State Electrochem.*, 23(17) (2019).
3. S. Rada, E. Culea, M. Rada, Microstructure and mechanical properties of stabilized zirconia ceramics, *Dental Materials*, 35 32, (2019).
4. R. E. David, R. Fechete, S. Sfrangeu, D. Moldovan, R. I. Chelcea, I. A. Morar, F. Stamatian, T. Kovacs, P. Popoi, *In Vivo* ¹H Nuclear Magnetic Resonance Spectroscopy and Relaxometry Maps of the Human Female Pelvis, *Analytical Letters*, 52 (1) 54-77 (2019);
5. P. Pășcuță, L. Pop, R. Stefan, L. Olar, G. Borodi, L. C. Bolundut, E. Culea, The impact of Ag and Cu nanoparticles on optical and magnetic properties of new Tb₂O₃-PbO-TeO₂ glass ceramic system, *Journal of Alloys and Compounds*, 799, 442 (2019).
6. S. Rada, M. L. Unguresan, M. Rada, D. Cuibus, J. Zhang, .Pengfei, R. Suci, A. Bot, E. Culea, Manganese-Lead-Lead Dioxide Glass Ceramics as Electrode Materials, *J. Electrochem. Soc.*, 166(16): A3987-A3996, (2019).
7. L. Pop, L. Bolundut, P. Pășcuță, E. Culea, Influence of Er³⁺ ions addition on thermal and optical properties of phosphate-germanate system, *Journal of Thermal Analysis and Calorimetry*, 138, 1895 (2019).
8. R. Stefan, L. C. Bolundut, L. Pop, G. Borodi, E. Culea, P. Pășcuță, Copper nanoparticles enhanced luminescence of Eu³⁺ doped lead tellurite glass ceramics, *Journal of Non-Crystalline Solids*, 505, 9 (2019).
9. S. Rada, D. Cuibus, H. Vermesan, M. Rada, E. Culea, Structural and electrochemical properties of recycled active electrodes from spent lead acid battery and modified with different manganese dioxide contents, *Electrochem. Acta*, 332-339 (268) (2018).
10. R. Ștefan, M. Karabulut, A. Popa, E. Culea, L. Bolundut, L. Olar, P. Pășcuță, A spectroscopic study of the influence of CuO addition on the ZnO-TeO₂ glass and glass ceramics, *Journal of Non-Crystalline Solids*, 498, 430 (2018).
11. S. Schweizerhof, D. E. Demco, A. Mourran, R. Fechete, M. Moeller, Diffusion of Gold Nanorods Functionalized with Thermoresponsive Polymer Brushes, *Langmuir*, 34, 8031-8041 (2018).
12. L. Bolundut, L. Pop, M. Bosca, G. Borodi, L. Olar, R. Suci, P. Pășcuță, E. Culea, R. Stefan, Structural and spectroscopic properties of some neodymium-boro-germanate glasses and glass ceramics embedded with silver nanoparticles, *Ceramics International*, 43, 12232 (2017).
13. L. Bolundut, L. Pop, M. Bosca, N. Tothazan, G. Borodi, E. Culea, P. Pășcuță, R. Stefan, Structural, spectroscopic and magnetic properties of Nd³⁺-doped lead tellurite glass ceramics containing silver, *Journal of Alloys and Compounds*, 692, 934 (2017).
14. S. Singh, D. E. Demco, K. Rahimi, R. Fechete, J. C. Rodriguez-Cabello, and M. Moller, "Aggregation behaviour of biohybrid microgels from elastin-like recombinamers", *Soft Matter*, vol. 12, pp. 6240-6252, (2016).
15. R. S. Sipos, R. Fechete, D. Moldovan, I. Sus, Z. Pavai, and D. E. Demco, "Ovariectomy-Induced Osteoporosis Evaluated by ¹H: One- and Two-Dimensional NMR Transverse Relaxometry", *Applied Magnetic Resonance*, 47, 1419-1437, (2016).

The offer addressed to the economic environment

Research & development	Characterization of structural and behavioural properties of materials by using spectrometric and magnetic analysis investigation methods. Design of advanced models for materials structure based on spectroscopic data and computational modeling.
Consulting	Consulting in: - spectroscopic and spectrometric analysis methods (1D and 2D ¹ H NMR relaxometry and diffusiometry, X-ray diffraction, FT-IR, UV-Vis, EPR); - environmental monitoring (sensors/actuators, monitoring platforms, database, data processing, data analysis, sonometry and photometry); - thermography and thermogravimetry; - magnetic measurements.
Training	Training in using different spectroscopic and spectrometric analysis methods (IR, UV-Vis, EPR, NMR, Thermography), magnetic measurements, sonometry and photometry.

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