



## Dr. Ana-Lavinia VASILIU

**Research assistant**

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### Research topics

Composite materials combine the organic and inorganic properties of materials and have been thoroughly studied in the last years, with the intent of obtaining bio-inspired materials with the ability to respond to internal or external stimuli. Composite materials have various applications, the biomedical and environmental fields having great interest and being in continuous change and adaptation according to human necessities. In this context, the general objective of my research was the preparation and the characterization of new composite materials based on calcium carbonate and different natural or synthetic polymers, with biomedical and environmental applications, by the unified action of a wide range of parameters (reactants concentration, reaction time, polymers' nature and structure, using polyelectrolyte complexes), applying various methods of calcium carbonate crystallization. Regardless of the type of obtained materials, the research followed three distinct stages: 1) the synthesis (with the elaboration of new, easy methods of synthesis and understanding the formation mechanism), 2) the characterization of the composite materials through modern and adequate techniques, and 3) testing their applicability in the medical (as drug delivering systems that react according to the variations of the environment parameters) or environmental (as specific sorbents for emerging pollutants, heavy metal ions or dyes) domains.

### Scientific research

Author and co-author of 29 ISI articles (16 in Q1, 9 in Q2), 1 book chapter, 7 articles in proceedings, 11 posters, 14 oral communications, 5 research grants, 158 citations (HI = 9). Receiver of the "Best Oral Communication" award offered by Polymers – MDPI for the conference paper "Hydrophobic Biocompatible CaCO<sub>3</sub>/Cellulose Material with Potential Application in Wound Dressing", A.-L. Vasiliu, M.-M. Zaharia, M.-M. Bazarghideanu, I. Rosca, D. Peptanariu, M. Mihai, during Macrolasi International Conference, 7-9 octombrie, 2021.

### Visibility

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Web of Science ResearchID: AAY-8439-2021

### Relevant publications

1. M. Mihai, S. Racovita, **A.-L. Vasiliu**, F. Doroftei, C. Barbu-Mic, S. Schwarz, C. Steinbach, F. Simon, **Auto-template microcapsules of CaCO<sub>3</sub>/pectin and nonstoichiometric complexes as sustained tetracycline hydrochloride delivery carriers**, *ACS Appl. Mater. Interfaces* 9 (2017) 37264–37278. **Q1** (IF<sub>2021</sub> = 10.383). DOI: 10.1021/acsami.7b09333
2. **A.-L. Vasiliu**, M. V. Dinu, M. M. Zaharia, D. Peptanariu, M. Mihai, **In situ CaCO<sub>3</sub> mineralization controlled by carbonate source within chitosan-based cryogels**, *Mater. Chem. Phys.* 272 (2021) 125025. **Q2** (IF<sub>2021</sub> = 4.778). DOI: 10.1016/j.matchemphys.2021.125025
3. **A.-L. Vasiliu**, M.M. Zaharia, M.M. Bazarghideanu, I. Rosca, D. Peptanariu, M. Mihai, **Hydrophobic composites designed by a nonwoven cellulose-based material and polymer/CaCO<sub>3</sub> patterns with biomedical application**, *Biomacromolecules* 23 (2022) 89-99. **Q1** (IF<sub>2021</sub> = 6.979). DOI: 10.1021/acs.biomac.1c01036