Dr. Florin BUCATARIU

Scientific researcher degree III
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Research topics

Surface modifications with natural/synthetic polyelectrolytes to synthesize organic/inorganic composites able to interact with different chemical species like enzymes, dyes, drugs, proteins, heavy metal ions etc. The development of new strategies to fabricate composites materials with tailored properties is based on the layer-by-layer or direct deposition techniques followed by the cross-linking of the organic part. Therefore we use a broad number of polyelectrolytes [polyethyleneimine, poly(vinyl amine), poly(alylamine), chitosan, poly(acrylic acid), alginic acid, poly(methacrylic acid)] to construct new organic arhitectures onto solid surfaces (silica or sand microparticles, silicon wafers etc.) with controlled chemical properties at nanometric scale. Characterization methods employed in our studies are: polyelectrolyte and potentiometric titrations, scanning electron microscopy (SEM), X-ray photoelectron spectroscopy (XPS), atomic force microscopy (AFM), UV-measurements, thermogravimetric analysis (TGA).

Scientific research

Author and co-author of 36 ISI articles (17 in Q1 zone and 10 in Q2 zone), two books, three book chapters, 9 articles in proceedings, 24 posters, 42 oral communications, member in 11 research national/international grants and **DIRECTOR** for 1 national grant (*Quartz sand/polyelectrolyte composite microparticles with high loading/release of some inorganic/organic compounds from polluted waters – POLYSAND: PN-III-P2-2.1-PED-2019-1996*), 416 citations (HI = 14).

Visibility

https://www.brainmap.ro/florin-bucatariu; https://orcid.org/0000-0001-5233-3585; Bucatariu, Florin - Web of Science Core Collection

Relevant publications

1. F. Bucatariu, C.-A. Ghiorghita, E. S. Dragan, **Sorption and release of drugs in/from cross-linked poly(ethyleneimine) multilayer films deposited onto silica microparticles,** *Colloids Surfaces B: Biointerfaces* 126 (2015) 224-231, **Q1** (**IF_{2021} = 5.999**). DOI: 10.1016/j.colsurfb.2014.12.026
2. F. Bucatariu, C.-A. Ghiorghita, E. S. Dragan, **Cross-linked multilayer films deposited onto silica microparticles with tunable selectivity for anionic dyes,** *Colloids Surf. A: Physicochem. Eng. Aspects* 537 (2018) 53-60, **Q2** (**IF_{2021} = 5.518**). DOI: 10.1016/j.colsurfa.2017.10.021
3. F. Bucatariu, C.-A. Ghiorghita, M.-M. Zaharia, S. Schwarz, F. Simon, M. Mihai, **Removal and separation of heavy metal ions from multicomponent simulated waters using silica/polyethyleneimine composite microparticles**, *ACS Appl. Mater. Interfaces*, 12, 37585-37596 (2020), **Q1** (**IF_{2021} = 10.383**). DOI: 10.1021/acsami.0c10283
4. F. Bucatariu, C. Teodosiu, I. Morosanu, D. Fighir, R. Ciobanu, L.-M. Petrila, M. Mihai, **An overview on composite sorbents based on polyelectrolytes used in advanced wastewater treatment**, *Polymers* 13 (2021) 3963, **Q1** (**IF_{2021} = 4.967**). DOI: 10.3390/polym13223963
5. F. Bucatariu, M.-M. Zaharia, L.-M. Petrila, F. Simon, M. Mihai, **Sand/polyethylenimine composite microparticles: Eco-friendly, high selective and efficient heavy metal ion catchers**, *Colloids Surf. A: Physicochem. Eng. Aspects* 649 (2022) 129540, **Q2** (**IF_{2021} = 5.518**). DOI: 10.1016/j.colsurfa.2022.129540