



## Dr. Florin Bucatariu

Scientific researcher

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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, metal ions etc. The development of new strategies to fabricate composites materials with tailored properties is based on the layer-by-layer technique followed by the cross-linking of the organic part. Therefore we use a broad number of polyelectrolytes [polyethyleneimine, poly(vinyl amine), poly(allylamine), chitosan, poly(acrylic acid), alginic acid, poly(methacrylic acid)] to construct new organic architectures onto solid surfaces (silica 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.

### Scientific research

Author and co-author of 24 ISI articles, two books, two book chapters, 7 articles in proceedings, 24 posters, 41 oral communications and 7 research grants.

### 5 important publications

1. F. Bucatariu, E. S. Dragan, F. Simon  
**Synthesis and Characterization of Novel Organic/Inorganic Hybrid Material with Short Peptide Brushes Generated on the Surface**  
*Biomacromolecules* 8 (2007) 2954-2959.  
<https://pubs.acs.org/doi/abs/10.1021/bm700603q>
2. F. Bucatariu, G. Fundueanu, G. Hitruc, E. S. Dragan  
**Single polyelectrolyte multilayers deposited onto silica microparticles and silicon wafers**  
*Colloids Surf. A: Physicochem. Eng. Aspects* 380 (2011) 111-118.  
<https://doi.org/10.1016/j.colsurfa.2011.02.012>
3. F. Bucatariu, C. -A. Ghiorghita, F. Simon, C. Bellmann, E. S. Dragan  
**Poly(ethyleneimine) cross-linked multilayers deposited onto solid surfaces and enzyme immobilization as a function of the film properties,**  
*Applied Surf. Sci.* 280 (2013) 812-819.  
<https://doi.org/10.1016/j.apsusc.2013.05.067>
4. 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.  
<https://doi.org/10.1016/j.colsurfb.2014.12.026>
5. 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.  
<https://doi.org/10.1016/j.colsurfa.2017.10.021>