

SOHEIL BODDOHI

Assistant Professor of Biomedical Engineering
Faculty of Chemical Engineering, Tarbiat Modares University
Email: s.boddohi@modares.ac.ir, Tel: 021 82884354

Professional skills

- § Polymer thin films modification, surface chemistry, analytical chemistry, and composition analysis
- § Professional expertise with: SEM, XPS, FT-SPR, PM-IRRAS, DLS, FT-IR, GPC, AFM, QCM-D, and Ellipsometry
- § Characterization of polymeric biomaterials and nanoscale surface coatings
- § Physical polymer science and engineering
- § Develop and design several methods to engineer nanostructured materials for technological applications
- § Tailoring different complex nanostructured polymers
- § Designing tissue scaffold based on polyelectrolyte complex polysaccharides

Education

Ph.D. Chemical Engineering,

2006 – 2010

Colorado State University, CO, USA

Dissertation Title: Engineering Nanostructured Polysaccharide-Based Polyelectrolyte Complexes.

Research area:

- § Characterization of nanostructured biopolymers for technological applications
- § Study of nanostructured surface coatings and thin film configurations
- § Tailoring nanoparticle-multilayer complex structures for improving protein and cell adsorption
- § Developed method to build nanoparticles for different cell and tissue engineering applications
- § Exploited the polyelectrolyte nature of glycosaminoglycans (GAG) to design new materials with nano

architecture for biomedical applications

§ Studying relationships between polysaccharide physical chemistry, self-assembly, and biochemistry to develop new biopolymer-based nanostructured, bioactive materials for tissue engineering and drug delivery.

**B.S. Chemical
Engineering,**

2001 – 2005

Sharif University of Technology, Tehran, Iran

Courses taught

- § Polymer Engineering
- § Biomaterials
- § Hydrogels in biomedical engineering

Research Interests

- § Characterization and design of nanostructured bioactive materials
- § Complex formation of polyelectrolyte multilayers and nanoparticles for scaffold tissue engineering
- § Biologically active surface coatings based on polymeric biomaterials
- § Vibrational spectroscopy, electron microscopy, chromatography
- § Stem cell interaction to saccharide based biomaterials
- § Targeted drug delivery systems

Training Workshops and Certificates

- § Viscotek Gel Permeation Chromatography
- § X-ray photoelectron spectroscopy data analysis
- § Concepts of quality systems
- § Surface Plasmon Resonance

Journal Publications

Review Article

1. **S. Boddohi**, M.J. Kipper, "Engineering nanoassemblies of polysaccharides." *Advanced Materials*, 22, (2010) 2998-3016

Peer Reviewed Articles

1. H.J. Park, J.T. McConnell, **S. Boddohi**, M.J. Kipper, and P.A. Johnson, "Synthesis and characterization of enzyme-magnetic nanoparticle complexes: effect of size on activity and recovery." *Colloids and surfaces B: Biointerfaces*, 83, (2011) 198-203
2. **S. Boddohi**, J. Almodóvar, H. Zhang, P.A. Johnson, and M.J. Kipper, "Layer-by-layer assembly of polysaccharide-based nanostructured surfaces containing polyelectrolyte complex nanoparticles." *Colloids and surfaces B: Biointerfaces*, 77, (2010) 60-68.
3. **S. Boddohi**, N. Moore, P.A. Johnson, M.J. Kipper, "Polysaccharide-Based Polyelectrolyte Complex Nanoparticles from Chitosan, Heparin, and Hyaluronan." *Biomacromolecules*, 10, (2009) 1402-1409.
4. **S. Boddohi**, C.E. Killingsworth, M.J. Kipper, "Polyelectrolyte multilayer assembly as a function of pH and ionic

strength using the polysaccharides chitosan and heparin." *Biomacromolecules*, 9, (2008) 2021-2028.

Proceedings Papers

1. **S. Boddohi**, J. Almodóvar, H. Zhang, P.A. Johnson, and M.J. Kipper, "Nanoassembly of polysaccharide based polyelectrolytes: Tuning morphology and size" *Proceedings of the 38th Annual Biochemical Engineering Symposium*, (2009) 50-56.
2. **S. Boddohi**, S. Yonemura, M.J. Kipper, "Polysaccharides with tailored nanostructures for biomedical applications." *Polymer Preprints*, 50 (2009) 331-332.

Conference Papers (* denotes speaker)

1. **S. Boddohi***, J. Almodovar, P.A. Johnson, M.J. Kipper, "Nanostructured polysaccharide-based surface coatings: Tailored morphology and chemistry." *Annual AIChE meeting*, Nashville, TN, November 9, 2009.
2. **S. Boddohi***, M.J. Kipper, "Exploring the size and composition of polysaccharide-based polyelectrolyte complex nanoparticles at different charge molar ratios" *Annual AIChE meeting*, Philadelphia, PA, November 20, 2008.
3. **S. Boddohi***, C. Killingsworth, and M.J. Kipper, "Engineering polyelectrolyte multilayer structure at the nanometer length scale by tuning polymer solution conformation". *National APS meeting*, New Orleans, LA, March 13, 2008.
4. **S. Boddohi***, S. Yonemura, M.J. Kipper, "Characterization of polyelectrolyte behavior of the polysaccharides chitosan, heparin, and hyaluronan, by light scattering and viscometry". *National APS meeting*, New Orleans, LA, March 10, 2008.
5. C. Killingsworth*, **S. Boddohi**, and M.J. Kipper, "Tuning Polyelectrolyte Behavior of Polysaccharides at Surfaces and in Solution," *2008 AIChE Rocky Mountain Regional Conference*, Socorro, NM, March 8, 2008.
6. **S. Boddohi***, C. Killingsworth, and M.J. Kipper, "Nanostructured Glycosaminoglycan-based Polyelectrolyte Multilayers using the Polyanion Heparin and the Polycation Chitosan." *Annual AIChE Meeting*, Salt Lake City, UT, November 7, 2007.
7. C. E. Killingsworth*, **S. Boddohi**, and M.J. Kipper, "Properties of Charged Polysaccharides in Solution by Gel Permeation Chromatography." *Annual AIChE Meeting*, Salt Lake City, UT, November 5, 2007.
8. **S. Boddohi*** and M.J. Kipper, "pH-Dependent Thickness Behavior of Nanostructured Polyelectrolyte Multilayers using Heparin and Chitosan." *2007 Joint ACS/AIChE Rocky Mountain Regional Meeting*, Denver, CO, August 31, 2007.