

Dr. Fatih Buyukserin

TOBB University of Economics and Technology
Department of Biomedical Engineering
Sogutozu Cad. No: 43, Sogutozu
06530, Ankara, TURKEY

E-Mail: fbuyukserin@etu.edu.tr
Phone: +90 (312) 292-4513
Fax: +90 (312) 292-4091
<http://fbuyukserin.etu.edu.tr>

EDUCATION

2001-2007

University of Florida

Gainesville, FL

Ph.D., Analytical Chemistry GPA: 4.0/4.0

Advisor: Professor Charles R. Martin

Dissertation: Template Synthesized Membranes for Ion Transport Modulation and Silica-Based Delivery Systems.

1997-2001

Bilkent University

Ankara, Turkey

B.S., Chemistry GPA: 3.5/4.0 (Magna Cum Laude, Salutatorian)

RESEARCH EXPERIENCE

2009-2011

Gazi University Nanomedicine and Advanced Technologies Research Center

Ankara, Turkey

- Fabrication of Silica-Based Nanoplatfoms for Targeted Delivery and Toxicology Studies

Summer 2007- 2009

University of Texas at Dallas as Postdoctoral Research Associate

Richardson, TX

- Preparation nonspherical nanocomposite materials with biorecognition ability as ultrasensitive contrast agents for the detection of breast cancer.
 - Experience in composite nanoparticle synthesis using nanoimprint lithography and pattern replication techniques in clean room environment and their characterization.
- Biofunctionalization of Si nanowires for label-free biosensing.
 - Directing master and doctorate students for surface functionalization of lithographically defined nanowires that can detect cancer biomarkers through differential readout.

2001-2007

University of Florida

Gainesville, FL

- Research experience in nanomaterials synthesis and characterization with emphasis on chemical and biofunctionalization of template synthesized nanotubes for biomolecule delivery applications.
 - Synthetic methods used include sol-gel chemistry, silane modifications, electroless and electrochemical metal deposition.
- Utilized pattern transfer approach to fabricate a unique nanopore photoresist film to prepare the shortest silica nano test tubes in the literature.
- Prepared and biofunctionalized silica nano test tubes for cell-specific drug delivery using anodized aluminum oxide template membranes.
- Investigated transport properties of gold nanotube membranes with emphasis on electrochemical modulation of transport.
- Developed a surface-plasma etching method for membrane platforms with different pore dimensions to examine the effect of nano-environment on chemical kinetics inside the pores
 - Expertise in scanning and transmission electron microscopy, fluorescence microscopy, plasma and wet etching techniques, spin coating, sputtering, and several related software.
 - Extensive experience with electrochemical methods including cyclic voltammetry, and impedance techniques as well as spectroscopic methods and contact angle measurements.
- Directed the lab personnel about chemical inventory, waste, etc. as the head lab manager.

INDUSTRIAL AND TEACHING EXPERIENCE

Fall 2003 & Fall 2005

University of Florida

Gainesville, FL

- Industrial liaison for Martin-group research project with the Broadley-James Corporation, (Irvine, CA). Supplementary diffusion and impedance studies for the development of a nanochannel-array reference electrode.

2001-2002

University of Florida

Gainesville, FL

- Teaching Assistant for General Chemistry Lab, University of Florida

Summer 2000

DYO Paint Factory

Izmir, Turkey

- Dye resin analysis by GC and UV-Vis techniques at the quality control labs.

AWARDS /ACTIVITIES

Full Undergraduate Scholarship, Bilkent University

1997-2001

Certificate of Achievement for Outstanding Academic Excellency, Univ. of Florida

2001-2006

FP7 Marie-Curie Reintegration Grant for Targeted Drug Delivery

2010-2012

Member of Materials Research Society

2008-

Member of American Chemical Society

2009-

PATENTS

W. Hu, J. Gao, F. Buyukserin, M. Aryal, X. Zhao, "Composition and method of making polymer nanorods using large scale nano-molding with porous templates", U.S. Provisional Patent Application #61014712, 2007.

W. Hu, M. Aryal, F. Buyukserin, X.M. Zhao, and J. Gao, "Photovoltaic devices based on nanostructured polymer films molded from porous template", submitted, 2009

SELECTED PRESENTATIONS

Buyukserin, F. ; Martin, C.R.; Hu, W.; Budak G.G. " Preparation of One Dimensional Nanocarriers from Nanoporous Membranes ", IANM 2nd World Congress, Antalya, TR, October 6, 2010.

Buyukserin, F. ; Martin, C.R.; Hu, W. " The Use of Anodized Aluminum for Preparing Non-spherical Nanocarriers ", NANOTR6, İzmir, TR, June 16, 2010.

(Invited) Hu, W.; Yoon, F.; Regonda, S.; Fernandes, P.; Vogel, E. M.; Buyukserin, F.; Zhao, X.; Gao, J. " Lithographically Defined Si Nanowire Field Effect Transistors for Biochemical Sensing ", IEEE International Conference on Nanotechnology (IEEE NANO 2008).

Martin, C.R.; Perry, J.; Buyukserin, F.; Hillebrenner, H." Nano test tubes: Synthesis, capping, bio-functionalization and biodegradation ", ACS National Conference, Philadelphia, PA, August 17, 2008.

Aryal, M.; Buyukserin, F.; Zhao, X.; Gao, J.; Hu, W. "Imprinted Large-Scale High Density Polymer Nanopillars For Various Applications", 52nd International conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN), 2A-3, Portland, OR, May 28, 2008.

Hu, W.; Buyukserin, F.; Crouch, A.; Tao, L.; Zhao, X.; Gao, J. “*Fabrication of Uniform Non-Spherical Polymer Nanocomposite Particles for Nanomedicine Applications*”, Nanomaterials for Defense Applications, Washington DC, April 21, 2008.

Hu, W.; Aryal, M.; Buyukserin, F.; Zhao, X.; Gao, J. “*Large-area, Periodic, High Density P3HT Nanostructures by Nanoimprint Lithography for Organic Photovoltaic Devices*”, Nanomaterials for Defense Applications, Washington DC, April 21, 2008

Buyukserin, F.; Aryal, M.; Hu, W.; Zhao, X.; Gao, J. “*Polymeric Composite Nanorods as Multifunctional Therapeutic Agents*”, MRS Spring Meeting, AA3.8, March 25, 2008.

Aryal, M.; Buyukserin, F.; Zhao, X.; Gao, J.; Hu, W. “*Fabrication of Large-area Periodic Polymer Nanopillars for Organic Solar Cells*”, MRS Spring Meeting, EE2.4, March 25, 2008.

Buyukserin, F.; Kang, M.; Kohli, P.; Wirtz, M.O.; Martin, C.R. “*Electroactive monolayers on gold nanotube membranes for ion transport modulation and decay studies*” ACS National Conference, Atlanta, GA, March 30, 2006

Hillebrenner, H.; Kang, M.; Buyukserin, F.; Mota, M.O.; Stewart, J.D.; Martin, C.R. “*Capping nanotubes with nanoparticles: Towards a targeted delivery platform*”, ACS National Conference, Atlanta, GA, March 30, 2006

3rd European Conference for Clinical Nanomedicine, Basel, CHE, May 2010
Poster Presentation: “*Particle Shape in Nanomedicine: The Case of Nanoporous Aluminum Oxide for 1D Nanocarrier Fabrication*”

56th Pittcon, Orlando, FL, March 2005
Poster Presentation: “*Functionalized Silica Tubes as Biochemical Delivery Vehicles*”

NSF Nanoscale Science and Technology Grantee Conference, VA, December 2004
Poster Presentation: “*Nano Test Tubes for Delivery Devices*”

204th ECS Fall Meeting, Orlando, FL, October 2003
Oral Presentation: “*Highly Regulated Transport of Ions Using Electrochemically Modulated Nanovalves*”

54th Pittcon, Orlando, FL, March 2003
Poster Presentation: “*Electrochemically-Modulated Nanovalves*”

PUBLICATIONS

Buyukserin, F.; Camli, S.T.; Yavuz, M.S.; Budak, G.G. “*Novel antifouling oligo(ethylene glycol) methacrylate particles via surfactant-free emulsion polymerization*” J. Colloid Interface Sci., **2011**, 355, 78-80.

Yavuz, M.S.; Camli, S.T.; Buyukserin, F. “*One Step Facile Synthesis of Antifouling Au Nanoparticles*” In preparation for Langmuir.

Deniz, H.; Buyukserin, F.; Bayindir, M. “*Fabrication of 1D Si nanocrystals from HSQ filled AAO templates*” In preparation for Appl. Phys. Lett.

Buyukserin, F.; Martin, C.R. “*The use of Reactive Ion Etching for obtaining "free" silica nano test tubes*” Applied Surf. Sci. **2010**, 256, 7700-7705.

Camli, S.T.; Buyukserin, F.; Yavuz, M.S.; Budak, G.G. "Fine-tuning of functional poly(methylmethacrylate) nanoparticle size at the sub-100 nm scale using surfactant-free emulsion polymerization" *Colloids Surf. A*, **2010**, *366*, 141-146.

Camli, S.T.; Buyukserin, F.; Balci, O.; Budak, G.G. "Size controlled synthesis of sub-100 nm monodisperse poly(methylmethacrylate) nanoparticles, using surfactant-free emulsion polymerization" *J. Colloid Interface Sci.*, **2010**, *344*, 528-532.

Buyukserin, F.; Aryal, M.; Hu, W.; Gao, J. "Fabrication of Polymeric Nanorods Using Bilayer Nanoimprint Lithography" *Small*, **2009**, *5*, 1632-1636.

Kececi, K.; Sexton, L. T.; Buyukserin, F.; Martin, C.R. "Resistive-pulse detection of short dsDNAs using a chemically functionalized conical nanopore sensor" *Nanomedicine*, **2008**, *3*, 787-796.

Aryal, M.; Buyukserin, F.; Mielczarek, K.; Zhao, X.M.; Gao, J.; Zakhidov, A.; Hu, W. "Imprinted large-scale high density polymer nanopillars for organic solar cells" *J. Vac. Sci. Technol. B.*, **2008**, *26*, 2562-2566.

Buyukserin, F.; Medley, C.D.; Mota, M.O.; Kececi, K.; Tan, W.; Martin, C.R. "Antibody functionalized nano test tubes target breast cancer cells" *Nanomedicine*, **2008**, *3*, 283-292.

Buyukserin, F.; Kang, M.; Martin, C.R. "Plasma-Etched Nanopore Polymer Films and their use as Templates to Prepare Nano Test Tubes." *Small*, **2007**, *3*, 106-110.

Buyukserin, F.; Kohli, P.; Wirtz, M.O.; Martin, C.R. "Electroactive Nanotubes Membranes and Redox-Gating" *Small*, **2007**, *3*, 266-270.

Hillebrenner, H.; Buyukserin, F.; Stewart, J. D.; Martin, C. R. "Biofunctionalization and Capping of Template Synthesized Nanotubes" *J. Nanosci. Nanotechnol.*, **2007**, *7*, 2211-2221.

Hillebrenner, H.; Buyukserin, F.; Kang, M.; Mota, M. O.; Stewart, J. D.; Martin, C. R. "Capping Nano Test Tubes with Nanoparticle Caps" *J. Am. Chem. Soc.*, **2006**, *128*, 4236-4237.

Hillebrenner, H.; Buyukserin, F.; Stewart, J. D.; Martin, C. R. "Template Synthesized Nanotubes for Biomedical Delivery Applications." *Nanomedicine*, **2006**, *1*, 39-50.

REFERENCES

Professor Charles R. Martin;
Department of Chemistry, University of Florida, Gainesville, FL, 32611-7200
Phone: (352) 3928205; crmartin@chem.ufl.edu

Professor Weihong Tan
Department of Chemistry, University of Florida, Gainesville, FL, 32611-7200
Phone: (352) 8462410; tan@chem.ufl.edu

Professor Jinming Gao
Department of Pharmacology, Univ. of Texas Southwestern Medical Center, Dallas, TX, 75390
Phone: (214) 6456346; jinming.gao@utsouthwestern.edu