

BIOGRAPHICAL SKETCH

NAME		POSITION TITLE	
Lisa A. DeLouise, PhD, MPD		Assistant Professor Department of Dermatology and Biomedical Engineering	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Providence College, Providence RI	BS	1979	Chemistry
Pennsylvania State University, State College PA	Ph.D.	1984	Physical Chemistry
IBM Research, San Jose CA	Visiting Scientist	1985	Chemical Physics
Rochester Institute of Technology	MPD	2001	Product Development

Positions and Honors

Professional Experience

2004-current	Assistant Professor - University of Rochester Medical Center (Dermatology and Biomedical Engineering)
2003	Instructor - University of Rochester Medical Center (Dermatology)
2002 - 2003	Postdoctoral Research Fellow - University of Rochester Medical School (Dermatology)
1998 - 2001	R&D Scientist / Project Manager - Ink Jet Business Unit - Xerox Corporation
1996 - 1997	Senior Technical Staff - Workgroup Specialty Products - Xerox Corporation
1993 - 1995	Member of the Research Staff - Microsystems Chemistry and Fabrication - Xerox Corporation
1985 - 1993	Member of the Research Staff - Interfaces and Processing Group - Xerox Corporation
1984 - 1985	Visiting Scientist - IBM Research Laboratories San Jose, CA

RESEARCH SUMMARY

UNIVERSITY OF ROCHESTER MEDICAL CENTER

Department of Dermatology and The Center for Future Health (2002-present)

I am spearheading an effort to develop a nanoscale biomaterials core competence at the University of Rochester Medical Center in collaboration with researchers in the departments of biomedical engineering, biophysics, biochemistry and Dermatology. This effort seeks to establish a wide range of cross disciplinary research collaborations and new course offerings at the graduate and undergraduate level. My research program is specifically focused on developing nanostructured porous silicon biomaterials for applications including optical microcavity biosensors, optically coded drug delivery devices, scaffolds for engineering cell adhesion, proliferation and phenotype expression, NIR quantum dot lasers, solid phase synthesis detector and immobilized enzyme supports. My research skills include optimizing biconjugate linking chemistries for receptor and enzyme immobilization, identifying device fabrication critical parameters, understanding the dependence of sensitivity and device performance factors on porous morphology and surface functionalization, conducting theoretical simulations of sensor response, using DOE (Design of Experiments) methodology to optimize etchant formulations and SEM to monitor nanotopography, and surface contact angle. I have designed and assembled a photoluminescence and optical reflection detector, a flow cell apparatus and a Reme Hart goniometer. Prototype devices have investigated to detect *P. aeruginosa*, enteropathogenic *E. coli*, *C. albicans* and lipophilic toxins using cDNA, protein receptors, small molecule receptors, ScFv antibody probes and glutathione-s-transferase enzymes. A novel hydrogel sensor support matrix is being explored an embodiment of the "smart bandage" concept point of care wound care management. PDMS molds of the nanotopology have been reproduced for a project aimed a separating stem cells. We have synthesized pentapeptides in porous silicon and have studied the growth of human dermal fibroblast and keratinocytes on modified porous scaffolds.

XEROX INK JET BUSINESS UNIT

Functional Project Manager - Ink Design and Media Team (1996-2001)

Research activity focused on understanding the relationships between fluid jetting characteristics and fabrication parameters including nozzle and channel geometry, surface chemistry, interface adhesion and head operation. Lead team of six direct reports (Ph.D. to technician level) to deliver dye-based ink designs for a thermal ink jet product platform including innovative photo inks. Responsible for all technical deliverables, generating stage gate product development documentation, team objective setting, training and skills development, project planning and tracking, status communication. Lead team of 3 direct reports to deliver ink jet media recommendations (plain paper, photo paper, transparency and matte paper) for a successful product platform that generated over \$10M revenue in the first year. Interfaced with vendors, internal marketing team and international corporate manufacturing teams.

Lisa A. DeLouise

XEROX CORPORATE RESEARCH AND TECHNOLOGY

Member of the Research Staff - Microsystems Chemistry and Fabrication (1993 - 1995)

Experimented with micromachining technologies to design novel ink jet drop ejector structures. Obtained \$40K internal funding to prototype a micro-machined plastic fluid manifold using international vendor. Developed adhesion promoter recommendations for polyarylene ether photoresists. Awarded \$40K/yr funding for 3 years to conduct ink/polyimide compatibility studies at Cornell University and spearheaded plasma deposited fluoropolymer hydrophobic coatings with University of Washington in which I received \$10K/yr funding for 2 years to develop a remote plasma deposition process.

Member of the Research Staff - Reactive Beam Surface Chemistry (1985-1993)

Built a successful research program to study collision dynamics of reactive gas/surface etching mechanisms utilizing ultra-high-vacuum angle resolved supersonic molecular beam scattering techniques. Research focused on elucidating understanding the mechanisms of plasma etching reactions for important microelectronic electronic materials (Si, GaAs, Ta, Ta₂O₅) and the ion-enhanced growth of GaN thin films on GaAs. This work represented the first effort to couple independent beam techniques to study the dynamics of reactive gas etching mechanisms. I was awarded a 3 year, \$1.2M/yr CRADA with Lawrence Livermore National Laboratory, (1991-1993) and a 3 year, \$65K/yr NSF Grant with the Center for Photoinduced Charge Transfer at the University of Rochester, with Professor J. Ferrar, "*Time Resolved Studies of Photoinduced Charge Transfer in Mass Selected Clusters*", (1989-1991).

Committees and Appointments (1989 – 2004)

- 2006 Member of the Harrison Howe Award Committee with the Rochester Chapter American Chemical Society
- 2005 Referee for the Journal of Environmental Technology and Science
- 2005 Program Committee for the ESTA Symposia on, "Commercialization of Biotechnology in New York"
- 2005 Member of the University of Rochester Medical Faculty Council
- 2004 Consultant for IatroQuest, Quebec Canada
- 2002 High Technology of Rochester - Advisor on industrial cluster economic stimulus initiatives
- 1996-1995 Referee for Surface Science, J. Physical Chemistry and the J. Vacuum Science and Technology.
- 1987-1995 Ad hoc grant review committee for NSF, DOE, AFOSR, NRL
- 1995 General Program Chairman Northeast Regional Meeting of the American Chemical Society, Rochester, NY.
- 1993 Program Committee for the Rochester Institute of Technology Fall Symposia on, "Frontiers in Electronic Materials Synthesis, Processing and Characterization".
- 1991 Rochester Section ACS Harrison Howe Award Selection Committee.
- 1991 Program Co-chair of the Rochester Section ACS / MRS Fall Symposia on, "Frontiers in Material Science Chemistry and Technology".
- 1989 Program Co-chair of Upstate NY Chapter of AVS Summer Symposia on, "Ion Beam Processing".
- 1987 Program Co-chair of Upstate NY Chapter of ACS Spring Symposia on, "Advances in Ion Beam Imaging of Material Surfaces".
- 1988 - 1990 Executive Committee of Rochester Chapter ACS.
- 1989 - 1997 Executive Committee Member of Upstate NY Chapter of AVS.
- 1989 - 1992 Co-chairman of Upstate New York Chapter of AVS Educational Committee.

Journal Publications

1. **L.A. DeLouise**, E. J. White and N. Winograd, "Characterization of CO Binding Sites on the Rh (111) and Rh (331) Surfaces by XPS and LEED: Comparison to EELS Results", Surface Sci. 147, 252-262 (1984) .
2. **L.A. DeLouise** and N. Winograd, "Characterization of the Molecular Adsorption and Desorption of Carbon Monoxide from Rhodium Surfaces", Surface Sci. 138, 417 (1984).
3. **L.A. DeLouise** and N. Winograd, "Adsorption and Desorption of NO From the Rh (111) and Rh (331) Surfaces," Surface Science 159, 199-213 (1985) .
4. **L.A. DeLouise** and N. Winograd, "Reduction of Nitric Oxide on the Carbon Pretreated Rh(331) Single Crystal Surface: Evidence For Molecular CN-Formation", Surface Sci. 154, 79 (1985).
5. Che-Chen Chang, **L.A. DeLouise**, N. Winograd, and B.J. Garrison, "Velocity Dependence of Azimuthal Anisotropy's in Ion Scattering from Rh(111)", Surface Science 154, 22-34 (1985).
6. T. Rettner, **L.A. DeLouise**, J. P. Cowin, D. J. Auerbach, "Rotationally Mediated Selective Adsorption, Physisorption and Dissociative Chemisorption of HD on W(110)", Chem. Phys. Lett. 118,355 (1985).
7. T. Rettner, **L.A. DeLouise**, J. P. Cowin, D. J. Auerbach, "Rotationally Mediated Selective Adsorption of HD on W(110): Physisorption Without Chemisorption", Faraday Discuss. Chem. Soc. 80, 1 (1985).
8. White, **L.A. DeLouise** and N. Winograd, "SIMS/XPS Studies of Surface Reaction on Rh (111) and Rh (331)", Springer Series in Chemical Physics 44, 219 (1986).
9. C. T. Rettner, **L.A. DeLouise**, and D.J. Auerbach, "Molecular Beam Study of the Dissociation Chemisorption of Oxygen in W(110)", J. Vac. Sci. Technol. 4, 1491 (1986).

10. C. T. Rettner, **L.A. DeLouise**, and D. J. Auerbach, "Effect of Incidence Kinetic Energy and Surface Coverage on the Dissociative Chemisorption of Oxygen on W(110)," *J. Chem. Phys.* 85, 1131 (1986).
11. R. Levis, N. Winograd, and **L.A. DeLouise**, "The Influence of Surface Atomic Steps on Site-Selective Adsorption Processes: Ethylidyne Formation on Rh(111) and Rh(331)", *JACS* 109, 6873 (1987) .
12. H.H. Rotermund, V. Penka, **L.A. DeLouise**, and C.R. Brundle, "Oxygen interaction with Pd₃Sn: X-ray photoelectron Spectroscopy and Secondary Ion Mass Spectrometry", *J. Vac. Sci. Technol.* A5, 1198 (1987).
13. R. Levis, **L.A. DeLouise**, E.J. White, and N. Winograd, " Defect induced surface chemistry: A comparison of the adsorption and thermal decomposition of C₂H₄ on Rh{111} and Rh{331}," *Surface Sci.* 230, 35-46 (1990).
14. **L.A. DeLouise**, "Angle-Resolved Supersonic Molecular Beam Study of the Cl₂/GaAs(110) Thermal Etching Reaction", *J. Chem. Phys.* 94, 1528 (1991).
15. **L.A. DeLouise**, "Evidence for Precursor-Mediated Cl₂ Etching of GaAs(110): Effect of Surface Temperature and Incident Translational Energy on the Reaction Probability", *J. Vac. Sci. Technol.*, A9, 1732 (1991).
16. **L.A. DeLouise**, "Supersonic Molecular Beam Study of the Trapping of Cl₂ on GaAs(110): Dissociative Chemisorption and Desorption", *Surface Sci. Lett.*, 244, L87-L95 (1991).
17. **L.A. DeLouise**, "Trapping Dynamics in Reactive Gas/Surface Scattering: Importance of Parallel Momentum Accommodation", *Chem. Phys. Lett.*, 180, 149 (1991).
18. **L.A. DeLouise**, "Investigation of the Mechanism of Ar⁺ Ion-Assisted Cl₂/GaAs(110) Etching: Role of Ion-Induced Charge Acceptor States", *J. Appl. Phys.*, 70, 1718 (1991).
19. **L.A. DeLouise**, "Investigation of the Ar⁺ Ion Enhanced Cl₂/GaAs{110} Etch Rate Phenomenon: Dependence on the Reactant Flux Ratio", *J. Appl. Phys.* 72(4), 1608 (1992).
20. **L.A. DeLouise**, "Reactive N₂⁺ Ion Bombardment of GaAs(100): A Method for GaN Thin Film Growth", *J. Vac. Sci. and Technol.* A(10), 1637 (1992).
21. **L.A. DeLouise**, "Nitridation of GaAs(110) Using Energetic N⁺ and N₂⁺ Ion Beams", *J. Vac. Sci. and Technol.* A(11), 609 (1993).
22. C.A. Schmuttenmaer, J. Qian, S.G. Donnelly, M.J. DeLuca, D.F. Varley, **L.A. DeLouise**, R.J.D. Miller and J.M. Farrar. "Time Dependence of the Photodissociation of Sr⁺(NH₃)₂", *J. Phys. Chem.* 97(13) 3077 (1993).
23. Y.R. Wang, **L.A. DeLouise** and T.E. Orłowski, "Unusual Angular Dependence of Trapping Probability at Highly Corrugated Surfaces", *J. Chem. Phys.* 99, 5508 (1993).
24. **L.A. DeLouise**, "Investigation of the Chemical Mechanisms of Ta(110)/Ta(110)-suboxide Etch Selectivity Using Cl₂ Molecular Beams.", *Surface Sci.* 324 (2-3), 233-248 (1995)
25. **L.A. DeLouise** and B.L. Miller, "Optimization of Mesoporous Silicon Microcavities for Proteomic Sensing", *Mat. Res. Soc. Symp. Proc.* Vol. 782, A5.3.1, (2004).
26. **L.A. DeLouise** and B.L. Miller , " Trends in Porous Silicon Biomedical Devices - Tuning Microstructure and Performance Trade-offs in Optical Biosensors ", *Proceedings of SPIE* Vol. 5357, pg. 111-125, 2004.
27. **L.A. DeLouise** and B.L. Miller , "Quantitative Assessment of Enzyme Immobilization Capacity in Porous Silicon" , *Anal. Chem.* ; **2004**; 76(23); 6915-6920
28. Ouyang, H.; **DeLouise, L. A.**; Christophersen, M.; Miller, B. L.; Fauchet, P. M. "Biosensing with one-dimensional photonic bandgap structure" *Proc. SPIE*, **2004**, 5511, 71-80.
29. **L.A. DeLouise** and B.L. Miller , "Enzyme Immobilization in Porous Silicon Biochip - Quantitative Analysis of the Kinetic Parameters for Glutathione-S-Transferases ", *Anal. Chem.* ; **2005**; 77(7); 1950-1956
30. **L.A. DeLouise** and B.L. Miller, "Cross-correlation of Optical Microcavity Biosensor Response with Immobilized Enzyme Activity - Insights into Biosensor and Bioassay Sensitivity" , *Anal. Chem.* ; **2005**; 77(10); 3222-3230
31. **L. A. DeLouise**, P. M. Fauchet, B. L. Miller, A. A. Pentland, "Hydrogel-Supported Optical-Microcavity Sensors" *Advanced Materials* **2005** 17(18), 2199-2203
32. **L. A. DeLouise**, "Effect of Porous Silicon Surface Properties on Dermal Fibroblast Adhesion, Proliferation and Phenotype", *manuscript in preparation*
33. P. Furbert and **L. A. DeLouise**, "Optical Monitoring of Peptide Synthesis on Porous Silicon Microcavity Scaffold", *manuscript in preparation*
34. H. Ouyang and **L.A. DeLouise**, "Effect of Nanotopography and Oxidation on Photoinduced Quantum Dot Fluorescent Enhancement", *manuscript in preparation*
35. S. Latham and **L. A. DeLouise**, "Tailor Bioerosion Properties of Optically Coded Porous Silicon for Drug Delivery", *manuscript in preparation*

Review Papers

36. Ming L. Yu and **L.A. DeLouise**, "Surface Reactions on Semiconductors Studied by Molecular Beam Reactive Scattering", *Surface Science Reports* 19, 286 (1994).

Abstracts

37. **L.A. DeLouise** and N. Winograd, "Influence of Steps on the Reactivity of NO on Clean and Pretreated Rhodium Single Crystal Surfaces", *Bull. Am. Phys. Soc.* 29, 347 (1984).

38. **L.A. DeLouise**, "Dynamical Study of the Ar⁺ Ion Enhanced Cl₂/GaAs{110} Etch Rate Phenomenon : Dependence on the Reactant Flux Ratio", International Symposium on Surface Science, Thin Films and Vacuum, Wuxi CHINA, Vacuum 43(11), 1083 (1992).
39. **L.A. DeLouise**, "Investigation of the Dynamics of the Cl₂/GaAs(110) Thermal and the Ar⁺ Ion Enhanced Etching Mechanisms", Proceedings from the, International Workshop on Science and Technology for Surface Reaction Processes, Toyko JAPAN, pg. 75 (1992).
40. **L.A. DeLouise**, "Smart Bandage - A Hydrogel Supported Optical Microcavity Sensor", *Technical Proceedings of the Nano Science and Technology Institute* , 2005 Vol 1 , Chap. 2: Medical Applications, pgs. 51 – 54.
41. Bonnie Gersten, Shlomit Chappel and **Lisa DeLouise**, "A Nanoporous Silicon 1-D Photonic Band Gap Microcavity as a Selective Optical Sensor", *Technical Proceedings of the Nano Science and Technology Institute* , 2005 Vol 1 , Chap. 2: Medical Applications, pgs. 51 – 54.

Xerox Internal Reports

1. **L.A. DeLouise**, "Dye-based Ink Designs for Caribbean Product Platform - Lessons Learned", Oct. 2001.
2. **L.A. DeLouise** and Mark Amos, "Benchmark Study of the Lexmark 7000 Thermal Ink Jet Printer", #9700335.
3. **L.A. DeLouise**, "Antares : System Engineering Lessons Learned", X9700191.
4. **L.A. DeLouise**, "Preliminary Study of Antares Material Compatibility", X9700192
5. Coauthor on, "Advantage IME Technology Selection Description, XEROX, NU-KOTE & XAAR CONFIDENTIAL", issued November 22, 1996.
6. **L.A. DeLouise**, "Alternative Technologies for Advanced Thermal Ink Jet Drop Ejector Designs: Technology Benefits, UMC Analysis and Strategic Manufacturing Plan for Injection Molded Plastic Fluid Manifold", X9600446
7. **L.A. DeLouise**, "Investigation of Polymer Adhesion to Silicon Substrates Using Silane, Zirconate and Titanate Adhesion Promoters for Thermal Ink Jet Applications", X9600420.
8. **L.A. DeLouise**, "Soak Test Studies of Polymer Films for TIJ Material Compatibility", X9600049.
9. R. E. Viturro, E. Peeters, **L.A. DeLouise**, and Joel Kubby, "Dry Etching Technologies for the Fabrication of Thermal Ink Jet Channels and Suspended Heaters", X9400482.
10. T.M. Smith, T.J, Fuller and **L.A. DeLouise**, "Advanced Materials for Microelectronics and Thermal Ink Jet Marking", X9400401.

United States Patents

1. 5751317 - Thermal Ink Jet Printhead with and Optimized Fluid Flow Channel in Each Ejector , May 12, 1998
2. 5900892 - Nozzle Plates for Ink Jet Cartridges, May 4, 1999
3. 6007173 - Ink Status System for a Liquid Ink Printer, December 28, 1999
4. 6257699 - Modular Carriage Assembly for Use with High Speed, High Performance Printing Device, July 10, 2001
5. 6273985 – Bonding Process, November 26, 2002
6. 6293668 - Method and Apparatus for Treating Recording Media to Enhance Print Quality in an Ink Jet Printer, September 25, 2001
7. 6,412,922 - Support structure for large channel plates of an ink jet printhead, July 2, 2002
8. 6,485,130 - Bonding process, November 26, 2002
9. Filed 20020063763 Apparatus and method for removing air bubbles from an ink jet printhead, May 30, 2002
10. Filed 20020063755 Support structure for large channel plates of an ink jet printhead, May 30, 2002
11. Filed 20010025690 Bonding process, October 4, 2001
12. A1126-US-NP Ink Jet Set for Reducing Intercolor Bleed, October 2004
13. Filed - How to Make and Use a Porous Device for Chemical and Biological Applications, April 2005
14. Provisional Filed - How to make and modify a porous device for biosensor applications, April 2005

C. Research Support.

Current

Porous Silicon Optical Sensor for *Candida* Detection

July 2005- July 2010

Principle Investigator: Lisa DeLouise

Principal Mentor: Ben Miller, Dermatology, Biochemistry, Biophysics

Co-mentor: Dr. Alice Pentland, Dermatology

Co-mentor: Constantine Haidaris, Microbiology and Immunology

Agency: NIH/NIAID 1K25AI060884-01A1

Major goals to advance understanding of porous silicon for optical biosensing and to investigate parameters to detect cutaneous *Candida* infection in murine model using phage display scFv antibody probes.

Completed Grants

Lisa A. DeLouise

Plastic Fluid Manifold Prototyping

Principle Investigator: Lisa DeLouise 1997
Agency: Xerox Innovator Opportunity Program Grant
Funding Level - \$40K

Major goals were to investigate alternative ways to fabricate microfluidic channel structures. Prototype injection molded micron-sized channel arrays with nozzle plates were made for Xerox in collaboration with MicroParts in Germany.

Cooperative Research and Development Agreement (CRADA) - *Advanced Molecular Dynamics Simulations of Molecular Beam Induced Surface Processes*

Principle Investigator: Christian Mailhot (Lawrence Livermore Labs) 1993-1996
Sub Investigator: Lisa DeLouise, Xerox Webster Research Center
Funding Level - \$1.2M/yr.

Major goals were to conduct theoretical modeling at LLNL to support experimental studies of reactive beam processes on Tantalum metal surfaces conducted at Xerox.

Cornell Polymer Outreach Program - *Studies of Polymer Degradation and Mechanisms of Interface Adhesion in Hybrid Microelectronic Devices*

Principle Investigator: Professor Ed Kramer (Cornell Material Science) 1994-1996
Sub Investigator: Lisa DeLouise, Xerox Webster Research Center
Agency: Xerox Ink Jet Business Unit
Funding Level - \$40K/yr

Major goals were to develop techniques to advance understanding of polyimide hydrolysis degradation in high performance ink formulations. Research was internalized at Xerox.

University of Washington Seattle - *Remote Plasma Deposition of Hydrophobic Fluorocarbon Films*

Principle Investigator: Professor Dave Castner, Chemistry Department 1992-1995
Sub Investigator: Lisa DeLouise Xerox Webster Research Center
Agency: Xerox Research Foundation
Funding Level - \$15K/yr

These funds were utilized to support research efforts focused on developing new methods to deposit hydrophobic coatings. Research was internalized at Xerox for use on ink jet printhead nozzle structures.

Time Resolved Studies of Photoinduced Charge Transfer in Mass Selected Clusters

Principle Investigator: Professor James Ferrar, Chemistry Department University of Rochester 1989-1991
Sub Investigator: Lisa DeLouise, Xerox Webster Research Center
Agency: NSF Science and Technology Grant Center for Photoinduced Charge Transfer
Funding Level - \$65K/yr

Goals were to elucidate understanding of the reaction dynamics and solvation processes of gas phase ionic clusters utilizing time of flight (TOF) mass spectrometry.

Training Record

PAST Undergraduate, Graduate and Postdoctoral Fellows:

Student	Role	Training Period	Degree / Program	Research Project	Current Position
Michelle Gabriele	Advisor	Fall 2003	Biomedical Engineering BME 395, Independent Research	Optical Biosensors – Characterizing Immobilized GST Activity	Research Staff, University of Pittsburgh Medical Center Department of Ophthalmology – Optical Coherence Tomography
Peng Meng Kou	Advisor	Summer 2004	June 2005 BS, Bioengineering Cornell University	Hydrogel supported optical biosensors	Graduate Student Biomedical Engineering Georgia Tech 2005-
Sarah Latham	Advisor	April - July 2005	June 2009, PhD Biomedical Engineering University of Rochester	Porous Silicon Optical Sensor for Drug Delivery	Job Hunting as of Dec 2005
Aleksey Tentler	Advisor	Summer 2005	2008 MD, University of Rochester	Optical Cell Growth Detection of Surface Modified Porous Silicon Scaffolds	2 nd year Medical School
John Roman	Advisor	October 2005	2006, High School	Identification and Characterization of Cyclic Peptide Binding Motif to Intimin using Phage Display	Senior, Greece Athena High School
Andrew Wunder	Committee Member	Aug. 2005	MS Chemical Engineering	Assembly and Stabilization of Polyethyleneimine onto Nanoparticle Silica Colloids	Kodak Film Processing

CURRENT Undergraduate, Graduate and Postdoctoral Fellows:

Student	Role	Training Period	Estimated date of completion of degree	Research Project
Patrick Furbert	Advisor	June 2005 - current	2008 BS Microbiology, University of Rochester	Optical Monitoring of the Solid Phase synthesis of RGD Integrin Binding Motif on Porous Silicon
Huimin Ouyang	Committee Member	Oct. 2002- current	June 2006 PhD, Optical Engineering University of Rochester	Macroporous Optical Biosensors and Photonic Nanostructures
Lisa Bonanno	Advisor	Sept 2005 - current	2007 MS Biomedical Engineering	Macroporous <i>Candida</i> Biosensor
Mike Springer	Committee Member	2005 -current	2006 MS Biomedical Engineering	Actin filaments as templates for creating nanowires on surfaces