

Objective

Empower students to identify problems, assess alternatives, and implement sustainable chemical solutions.

Employment

Current Associate Director and Postdoctoral Scientist at UC Berkeley Center for Green Chemistry

Education

2009-2010 Postdoctoral Fellow, Lawrence Berkeley National Lab

Advisors Taleb Mokari (Materials Science Division) and Jiamin Wan (Earth Science Division)

“Predicting the Stability and Mobility of Engineered Nanomaterials after their Release into Soils and Groundwaters”

2003-2009 Ph.D., Chemistry University of California, Berkeley

Research advisors John Arnold and Peidong Yang

“Surface Functionalization of Inorganic Nanostructures: The Interface of Materials Science and the Environment”

1998-2002 B.A., Chemistry Reed College

Advisor Margret Geselbracht

“Structure/Function Relationships in Niobate Perovskites with Possible Application to Superconducting Structures”

Awards and Honors

UC Berkeley Benjamin P. Boussert Memorial award 2009

Martha and Paul Pitman Scholarship 2006

Outstanding Graduate Student Instructor Award 2003 and 2004

Member of Phi Beta Kappa

Frank H. Westhiemer Scholarship 2001-2002 & 2000-2001

Agnes Kuhn Memorial Scholarship 2000-2001

Pearl Konttas Memorial Biology Scholarship 1999-2000

Stanley Adamson Memorial Scholarship 1999-2000.

Publications and Selected Presentations

1. **Mulvihill, M.**; Rupert, B.; He, R.; Hochbaum, A.; Arnold, J.; Yang, P. “Synthesis of Bifunctional Polymer Nanotubes from Silicon Nanowire Templates via Atom Transfer Radical Polymerization,” *Journal of the American Chemical Society*, **2005**, 127, 16040.
2. Rupert, B.; **Mulvihill, M.**; Arnold, J. “Atom Transfer Radical Polymerization on ZnO Nanowires,” *Chemistry of Materials*, **2006**, 5045.
3. **Mulvihill, M.**; Tao, A.; Benjauthri, K.; Arnold, J.; Yang, P. “Surface-Enhanced Raman Spectroscopy for Trace Arsenic Detection in Groundwater,” *Angewandte Chemie-International Edition*, **2008**, 6456.
4. Galush, W.; Shelby, S.; **Mulvihill, M.**; Tao, A.; Yang, P.; Groves J.T. “A Silver Nanocube-Based Membrane Binding Sensor,” *Nano Letters*, **2009**, 2077.
5. **Mulvihill, M.** and Yang, P. “Complex Plasmonic Structures by Anisotropic Etching of Silver Nanoparticles,” *Journal of the American Chemical Society*, **2010**, 268.
6. **Mulvihill, M.**; Habas, S.E.; Jen-La Plante, I.; Wan, J.; and Mokari, T. “Influence of Size, Shape, and Surface Coating on the Stability of Aqueous Suspensions of CdSe Nanoparticles,” *Chemistry of Materials*, **2010**, DOI:10.1021/cm101262s.

7. **Mulvihill, M.** "Surface-Enhanced Raman Spectroscopy for Trace Arsenic Detection in Groundwater," Invited talk at Superfund Basic Research Annual Meeting, December **2007**.
8. **Mulvihill, M.** "Silver Shape Control for High Performance SERS," Invited talk at SERS DARPA Annual Meeting, January **2009**.
9. **Mulvihill, M.** "Influence of Size, Shape and Surface Coating on the Stability of Aqueous Nanoparticle Suspensions" AGU Annual Meeting, December **2009**.

Patents

1. **Mulvihill, M.;** Tao, A.; Sinsermsuksakul, P.; Arnold, J.; Yang, P. "Surface-Enhanced Raman Spectroscopy Substrate Arsenic Sensing in Groundwater," Provisional US Patent 61/028,874, February 14th 2008.
2. Galush, W.; Shelby, S.; **Mulvihill, M.;** Tao, A.; Yang, P.; Groves J.T. "A Nanoparticle-based Membrane Binding Sensor," Provisional US Patent 61/150,680, February 6th, 2009.

Teaching Experience

Principle Instructor for Green Chemistry and Sustainable Design Seminar Series

- Obtained educational grant from the Sustainable Products and Solutions Program funded by Dow Chemical
- Designed and promoted new graduate seminar series at UC Berkeley
- Invited guest speakers and provided logistical support
- Led discussion sections with 20+ students and faculty introducing the basic principles of Green Chemistry (Fall 2008)

Mentor for Undergraduate Researchers

- Advised three undergraduate researchers
- Obtained an educational grant from the Sustainable Products and Solutions Program
- Taught undergraduates laboratory techniques, experimental design, scientific record keeping, how to conduct literature searches, and how to present scientific data (Fall 2006-Summer 2008)

Algebra Instructor with Patten College at San Quentin

- Wrote and taught college algebra curriculum
- Organized a team of 4 instructors, coordinating the course schedule and evaluations
- Instructed at San Quentin State Prison one evening per week (Summer 2007- Fall 2008)

Graduate Student Instructor with Department of Chemistry

Organic Chemistry

- Taught the laboratory and discussion portions of the class (Fall 2003)

Inorganic Chemistry

- Designed and implemented curriculum for weekly review sessions
- Created problem sets and wrote exams (Fall 2004, 2005)

Introduction to Graduate Teaching

- Taught educational theory to graduate students (Fall 2006)

Public Allies Science Fellow at Eagle Rock School—A residential school for students who have not succeeded in traditional environments.

- Taught three interdisciplinary science classes each trimester
- Wrote and revised multidisciplinary science curriculum
- Organized and lead service learning projects
- Residential advisor to the students at Eagle Rock School (2002-2003)

Leadership and Service Experience

Founder www.greenchemistryandsustainabledesign.org

- Developed and maintained a website designed to support the green chemistry seminar and promote the development of green chemistry at UC Berkeley
 - Student representative at roundtable faculty discussions concerning Green Chemistry at Berkeley
 - Interacted with press agencies including: LA Times September 19th, 2008 and local ABC evening News August 2008
- (Spring 2007-Current)

Co-founder and Member of Chemists for Peace

- Encouraged the public's interest in science
 - Lead volunteer trips in the community
 - Implemented a department recycling program
 - Participated in local government forums including California's new Green Chemistry Initiative
- (2004-2009)

Graduate Life Committee Member

- Edited the Graduate Student Handbook
 - Coordinated prospective student visitation weekends
 - Represented the department for visiting community members
- (2004-2008)

Interests

I build and ride bicycles of all sorts. I commute by bike daily, and have worked in 2 different bike shops. Having ridden my bike over the Rockies, down the coast of California, from Toulouse, France to the Mediterranean Sea, and in the hills of Southern China, I have found no better way to travel.