Michael Lueckheide

Contact Information

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Education

- Ph. D. Candidate in Physical Chemistry, University of Chicago, Chicago Il January 2015-Present
- M.S., Physical Chemistry, University of Chicago, Chicago Il September 2013-December 2014
- B.A., Chemistry and Physics, Vassar College, Poughkeepsie NY
  Thesis: "The Controlled Electrochemical Growth of Transition Metal Nanoparticles on Carbon Nanotubes," August 2009-May 2013

Research Interests

- Materials Chemistry and Physical Chemistry
- Complex Coacervates and Micelles

Research Experience

Advisor: Molecular Engineering Professor Matthew Tirrell, University of Chicago

- Creation and characterization of complex coacervates and coacervate core micelles

Advisor: Chemistry Professor Christopher Smart, Vassar College

- Controlled electrochemical growth of transition metal nanoparticles on carbon nanotubes, Fall 2012-Spring 2013
- CVD of nanotubes on silicon wafers, Spring 2012
  Grew carbon nanotubes on cobalt doped silicon wafers using chemical vapor deposition. Characterized them with Raman spectroscopy.
- Functionalization of fullerenes with pyrrolidine ligands, Spring 2011
  Performed HPLC separation of fullerenes and reaction product mixtures. Used MALDI-TOF mass spectrometry to characterize the substituted products in each fraction.

Advisor: Chemistry Professor Joseph Tanski, Vassar College

- π-Stacking motifs in the crystal structures of bis(phosphine) copper (I) η^2-tetrahydroborate complexes, Spring and Summer 2012
  Determined the crystal structure of one title complex using XRD. Performed ^1H, ^{13}C, *and* ^{31}P *NMR on all title complexes.*

Advisor: Physics Professor Jenny Magnes, Vassar College

- Laser diffraction analysis of C. elegans motion, Summer 2011
  Used diffraction patterns created by swimming C. elegans to determine their thrashing frequencies.

- Laser induced breakdown spectroscopy of quantum dots grown on silicon wafers, Summer 2011
  Studied possible chemical mechanisms for the etching of quantum dots on silicon wafers with hydrofluoric acid. Learned how to perform the etching process. Performed elemental analysis on the wafers using LIBS at Delaware State University.

Advisor: Earth Science Professor Brian McAdoo
History Professor Quincy Mills, Vassar College

- Field Geophysics: Race and Class in the Hudson Valley, Fall 2010
  Performed tests including electrical resistivity metering, ground-penetrating radar scans, and cesium-vapor magnetometry on a graveyard in the Hudson Valley. Visited local archives to analyze primary historical sources. Synthesized geophysical and historical information as part of a group presentation to the local community.

Refereed Publications

- "π-Stacking Motifs in the Crystal Structures of Bis(phosphine) Copper (I) η^2-Tetrahydroborate Complexes," Michael Lueckheide, Nyanza Rothman, Bona Ko, Joseph M. Tanski, Accepted for publication in Polyhedron journal, http://dx.doi.org/10.1016/j.poly.2012.08.003

- "Analysis of Freely Swimming C. elegans Using Laser Diffraction," J. Magnes, K. Raley-Susman, N. Melikechi, A. Sampson, R. Eells, A. Bello and M. Lueckheide,Open Journal of Biophysics, Vol. 2 No. 3, 2012, pp. 101-107. doi: 10.4236/ojbiphy.2012.23013.

Employment Experience

- Chemistry Department Teaching Assistant, University of Chicago, Fall 2013-Spring 2014
  Held discussion sessions, proctored labs and exams, and graded for undergraduate General Chemistry and Thermodynamics classes.

- Supplemental Instructor for Organic Chemistry, Vassar College, Fall 2012-Spring 2013
  Held small-group problem-solving and review sessions outside of lecture for organic chemistry students.

- Supplemental Instructor for General Chemistry, Vassar College, Fall 2011-Spring 2012
  Held small-group problem-solving and review sessions outside of lecture for general chemistry students.

- Diving into Research Mentor, Vassar College, Summer 2012 and Summer 2011
  Acclimated incoming freshmen to college life by planning future course selections with them, living near them, and introducing them to the Vassar community.

- Lab Assistant for General Chemistry Lab, Vassar College, Spring 2011
  Assisted the lab instructor in overseeing and helping lab students.

Presentations

- Presented research from 2014 and 2015 at the American Chemical Society Fall National Meeting, Boston, Massachusetts, Summer 2015

- Presented research with group from Fall 2010 at a Poughkeepsie Community Center, Spring 2011

- Presented research from Summer 2011 at URSI Symposium at Vassar College, Fall 2011

- Presented research from Summer 2011 at the Optical Society of America's Annual Conference, San Jose, California, Fall 2011

Awards and Honors

- Named to Frances D. Fergusson Scholarship Fund, Vassar College, August 2010-May 2013
- Olive Lammert Book Prize for excellence in Physical Chemistry, Vassar College, May 2012
- Olive Lammert Book Prize for excellence in General Chemistry, Vassar College, May 2010

Extracurricular Activities

- Served as Majors' Committee Chair for the Chemistry and Physics Departments, Vassar College, Fall 2012-Spring 2013
  Organized majors' meetings and events. Provided information about departmental events and opportunites to both current majors and undecided students.