

MATTHEW J. BIERMAN

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EDUCATION

Ph.D., Chemistry, University of Wisconsin-Madison, projected 2009

Thesis: Photovoltaic and Spintronic Applications of Chalcogenide Nanowires, Advisor: Professor Song Jin

B.S., Chemistry/Physics, with honors, University of Wisconsin-La Crosse, 2003

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Wisconsin-Madison, 2004-Present

Advisor: Professor Song Jin

- Developed novel synthetic pathways to chalcogenide nanostructures and investigated their magnetic and spectroscopic properties
- Analyzed samples with materials science techniques including x-ray diffraction, transmission electron microscopy, scanning electron microscopy
- Aided research advisor in design and setup of new laboratory space
- Designed and built chemical vapor deposition chamber for growth of nanostructures low-vacuum environments
- Designed and building magneto-optical Kerr effect (MOKE) microscope with cryogenic capacity
- Supervised undergraduate student in independent research project
- Built and maintained LAN, website for research group, developed functional knowledge of servers (DNS, DHCP, HTTP), Apache, PHP, MySQL, HTML, Windows, Linux; experience in Java and C++ language
- Funded future synchrotron research by co-writing \$72,000 DOE grant with fellow graduate student
- Prepared and taught pre-laboratory class outlining experimental procedures and considerations
- Supervised classes of 15-18 undergraduate students in analytical chemistry lab

Undergraduate Research Assistant, University of Wisconsin-La Crosse, 2000-2003

Advisor: Professor Robert McGaff

- Synthesized phthalocyanines with emphasis on inorganic and air sensitive reaction techniques
- Proficient with advanced crystallization techniques

Undergraduate Research Assistant, University of Wisconsin-La Crosse, 2001-2003

Advisor: Professor Robert Klindworth

- Performed computer simulations to study quantum chromodynamics
- Developed new light-front field model for quark/anti-quark interactions

PROFESSIONAL SOCIETIES AND ACTIVITIES

- American Chemical Society 2005-present
- Materials Research Society 2006-present
- Graduate Student-Faculty Liaison Committee, Department of Chemistry, University of Wisconsin-Madison (Secretary 2006-2007, Materials Division Representative 2005-2007)
- Analytical and Materials Division Seminar Committee, Department of Chemistry, University of Wisconsin-Madison, 2005-2007
- Legislative and Regent Relations Committee, University of Wisconsin-La Crosse, 2001-2002
- Student Services and Buildings Committee, University of Wisconsin-La Crosse, 2001-2002
- Residency Appeals Board, University of Wisconsin-La Crosse, 2001-2002
- Student Body Senate, University of Wisconsin-La Crosse, 2001-2002
- Student Judiciary, University of Wisconsin-La Crosse, 2001-2002

PUBLICATIONS

- **M.J. Bierman**, Y.K.A. Lau, S. Jin, "Hyperbranched PbS and PbSe Nanowires and the Effect of Hydrogen Gas on Their Synthesis", *Nano Lett.* 7 (2007) 2907
- **M.J. Bierman**, K.M. Van Heuvelen, D. Schmeisser, T.C. Brunold, S. Jin, "Ferromagnetic Semiconducting EuO Nanorods", *Adv. Mater.* 19 (2007) 2677
- J. Szczech, A.L. Schmitt, **M.J. Bierman**, S. Jin, "Single-Crystal Semiconducting Chromium Disilicide Nanowires Synthesized via Chemical Vapor Transport", *Chem. Mater.* 19 (2007) 3238
- H.M. Kieler, **M.J. Bierman**, I.A. Guzei, P.J. Liska, R.W. McGaff, "Racemic iron(III) and cobalt(III) complexes containing a new pentadentate 'helmet' phthalocyaninato ligand", *Chem. Comm.* (2006) 3326
- A.L. Schmitt, **M.J. Bierman**, D. Schmeisser, F.J. Himpsel, Song Jin, "Synthesis and Properties of Single-Crystal FeSi Nanowires", *Nano Lett.* 6 (2006) 1617
- B.F. Klindworth, **M.J. Bierman**, A. Bush, "The 2+1 Dimensional Q/Q-bar Potential in Fourth Order Color-Dielectric Transverse Lattice QCD", Los Alamos National Laboratory High Energy Physics—Phenomenology (2002)

PRESENTATIONS

- 2007 Materials Research Society Fall National Meeting, 1) "Hyperbranched and Complex Heterostructured Nanowires of PbS and PbSe", 2) "Multiexciton Generating Nanowires of PbSe and PbS" **M.J. Bierman**, Y.K. Albert Lau, and S. Jin, Boston, MA, November 26-30, 2007
- 233rd American Chemical Society National Meeting, "Synthesis and Physical Properties of Ferromagnetic Semiconducting EuO Nanorods", INOR 675, **M.J. Bierman**, K.M. Van Heuvelen, T.C. Brunold, D. Schmießer, S. Jin, Chicago, IL, March 25-29, 2007
- 2006 Materials Research Society Fall National Meeting, 1) "Synthesis and Physical Properties of Ferromagnetic Semiconducting EuO Nanorods", 2) "Nanorods of the Concentrated Ferromagnetic Semiconductor EuO: Synthesis and Physical Properties" **M.J. Bierman** and S. Jin, Boston, MA, November 27-December 2, 2006
- 41st American Chemical Society Midwest Regional Meeting, "Synthesis and Physical Properties of Ferromagnetic Semiconducting EuO Nanorods", **M.J. Bierman** and S. Jin, Quincy, IL, October 25-27, 2006
- 2006 Argonne National Laboratory Users Meeting, "Synthesis and Physical Properties of Ferromagnetic Semiconducting EuO Nanorods", **M.J. Bierman** and S. Jin, Argonne, IL, May 1-5, 2006
- 13th Wisconsin Space Conference, "Calculating the Quark/Anti-Quark Potential in Color Dielectric QCD", **M.J. Bierman**, B.F. Klindworth, Green Bay, WI, August 2003
- National Conference of Undergraduate Research, "Recent Advances in the Synthesis and Characterization of Novel Alkoxy-Modified Phthalocyanines", **M.J. Bierman** and R.W. McGaff, Salt Lake City, UT, March 2003
- National Conference of Undergraduate Research, "Calculating the Quark/Anti-Quark Potential in Color Dielectric QCD", **M.J. Bierman**, B.F. Klindworth, A. Bush and A. Bloom, Whitewater, WI, April 2002
- UW-La Crosse Annual Celebration of Undergraduate Research and Creativity, "Recent Progress in Alkoxy-Modified Phthalocyanine Synthesis", **M.J. Bierman** and R.W. McGaff, La Crosse, WI, April 2001

HONORS AND AWARDS

Graduate

- Air Products Fellowship (2007-8)
- Vilas Travel Grant, University of Wisconsin-Madison (2007)

Undergraduate

- Wisconsin Space Grant Consortium Fellowship (2002)
- University of Wisconsin-La Crosse Summer Research Fellowship (2002)
- Wisconsin Space Grant Consortium Scholarship (2002)
- Myrtle Trowbridge Scholarship in Chemistry (2002)
- Michael J. and Sandra R. Dolan Scholarship in Chemistry (2001)