

Melissa A. Maurer-Jones

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Education

Ph.D. (**2012 – expected graduation**) – Chemistry, University of Minnesota - Twin Cities, Minneapolis, MN.

Thesis: Fundamental Assessment of the Immunogenicity and Ecotoxicity of TiO₂ Nanoparticles

Advisor: Christy L. Haynes

M.S. (**2008**) – Chemistry, University of Minnesota - Twin Cities, Minneapolis, MN.

Advisor: Christy L. Haynes

B.S. (**2006**) – Chemistry, University of St. Thomas, St. Paul, MN.

Research Advisor: Anthony J. Borgerding

Research Experience

Graduate Assistant (**2008-present**) – Department of Chemistry, University of Minnesota.

Advisor: Christy L. Haynes

- Worked to study the impact of engineered titania nanomaterials on the cellular function of immune system cells and nonpathogenic bacteria models using electrochemistry, quartz crystal microbalance, and traditional toxicological assays

Lab Analyst (**2006-2007**) – Pace Analytical Services, Inc., Minneapolis, MN

- Performed analysis of 3M product to ensure product safety, reviewed notebooks for co-workers, and maintained company instruments

Research Assistant (**2002-2006**) – Department of Chemistry, University of St. Thomas

Advisor: Anthony J. Borgerding

- Developed a microextraction tool for extracting volatile compounds from aqueous solutions

Awards and Honors

Doctoral Dissertation Fellowship (2011-2012) – University of Minnesota

American Chemical Society-Division of Analytical Chemistry (2011) – Summer Fellowship,
American Chemical Society

Graduate Student Travel Grant (2011) – Society of Electroanalytical Chemistry

Graduate Research Symposium Travel Award (2010) – Department of Chemistry, University of
Minnesota

Scholarly Travel Grant (2009) – Graduate and Professional Student Assembly, University of
Minnesota

Mary Haga Travel Grant (2009) – Xi Chapter, Graduate Women in Science

National Science Foundation Graduate Research Fellowship (2008-2011) – National Science
Foundation

Wayland E. Noland Fellowship (2007-2008) – University of Minnesota

American Institute of Chemists Outstanding Senior Award (2006) – University of St. Thomas

Barry M. Goldwater Scholarship (2005) – Barry M. Goldwater Scholarship Program

ACS Award in Analytical Chemistry (2005) – University of St. Thomas

William D. Larson Chemistry Scholarship (2005) – University of St. Thomas

Peer-Reviewed Publications

M.A. Maurer-Jones, J.R. Christenson, C.L. Haynes. TiO₂ Nanoparticle-Induced ROS Correlates with Immune Cell Dysfunction. *Environmental Science and Technology*. **2011**, (submitted).

M.A. Maurer-Jones, B.J. Marquis, Ö.H. Ersin, Y.-S. Lin, C.L. Haynes. The Bench Scientist's Perspective on the Unique Considerations in Nanoparticle Regulation. *Journal of Nanoparticle Research*. **2011**,13, 1389-1400.

M.A. Maurer-Jones, Y.-S. Lin, C.L. Haynes. Functional Assessment of Metal Oxide Nanoparticles in Immune Cells. *ACS Nano*. **2010**, 4, 3363-3373.

B.J. Marquis, **M.A. Maurer-Jones**, K.A. Braun, C.L. Haynes. Amperometric Assessment of Functional Changes in Nanoparticle-Exposed Immune Cells: Varying Au Nanoparticle Exposure Time and Concentration. *Analyst*. **2009**, 134, 2293-2300.

M.A. Maurer-Jones, K.C. Bantz, S.A. Love, B.J. Marquis, C.L. Haynes. Toxicity of Therapeutic Nanoparticles. *Nanomedicine*. **2009**, 4, 219-241.

M.A. Jones, A. Kramer, M. Humbert, T. Vanadurongvan, J. Maurer, M.T. Bowser, A.J. Borgerding. Analysis and Monitoring of Volatile Analytes from Aqueous Solutions by Extractions into the Gas Phase Using Microdialysis Membranes and Coupling to Fast GC. *Analytical Chemistry* **2008**, 80, 123-128.

Presentations

M.A. Maurer-Jones, C. Christenson, G. Gibson, and C.L. Haynes. “Fundamental Assessment of the Impacts of TiO₂ Nanoparticles on *Shewanella oneidensis*.” Poster presentation at the Gordon Research Conference – Environmental Nanotechnology, Waterville Valley, NH, **June 2011**.

M.A. Maurer-Jones and C.L. Haynes. “Fundamental Study of the Cellular Response after Exposure to TiO₂ Nanoparticles.” Oral presentation at the 62nd Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Atlanta, GA. **March 2011**.

M.A. Maurer-Jones and C.L. Haynes. “Fundamental Assessment of TiO₂ Nanoparticle Toxicity Using Carbon-Fiber Microelectrode Amperometry.” Oral Presentation at Society of Toxicology Northland Chapter Meeting, St. Paul, MN. **October 2010**.

M.A. Maurer-Jones and C.L. Haynes. “Functional Assessment of Metal Oxide Nanoparticle Effects on Cell Function.” Oral Presentation at Chemistry Graduate Student Research Symposium, Minneapolis, MN. **May 2010**.

M.A. Maurer-Jones, Y.-S. Lin, B.J. Marquis, L.G. Werkmeister, C.L. Haynes. “Toxicity of Metal Oxide Nanoparticles: A Study on the Impact of Porosity on Cell Function.” Poster Presentation at the 4th International Conference on Nanotechnology: Occupational and Environmental Health, Helsinki, Finland. **August 2009**.

M.A. Maurer-Jones, B.J. Marquis, L.G. Werkmeister, C.L. Haynes. “Exploring the Effects of TiO₂ Nanoparticles on Mast Cell Function.” Poster presentation at the Society of Applied Spectroscopy Regional Meeting, St. Paul, MN. **May 2009**.

M.A. Maurer-Jones, B.J. Marquis, L.G. Werkmeister, C.L. Haynes. “Exploring the Effects of TiO₂ Nanoparticles on Mast Cell Function.” Poster presentation at NIH Chemical Biology Interface Training Grant Symposium, St. Paul, MN. **May 2009**.

M.A. Maurer-Jones, B.J. Marquis, L.G. Werkmeister, C.L. Haynes. “Exploring the Effects of TiO₂ Nanoparticles on Cell Function with Carbon-Fiber Microelectrode Amperometry.” Poster

presentation at the 60th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Chicago, IL. **March 2009.**

M.A. Jones, A.J. Borgerding. “Extraction of Gas Phase Analytes from Aqueous Solutions Using Microdialysis Membranes.” Poster presentation at the 231st National Meeting of the American Chemical Society, Atlanta, GA. **March 2006.**

M.A. Jones, A.J. Borgerding, M.T. Bowser. “Extraction of Gas-Phase Analytes from Aqueous Solutions.” Poster presentation at the 28th International Symposium on Capillary Chromatography and Electrophoresis, Las Vegas, NV. **May 2005.**

M.A. Jones, A.J. Borgerding. “A Cryofocusing Sampling Technique to Determine Selenium-Containing VOCs in Selenium Enriched Broccoli.” Poster presentation at the 18th National Conference on Undergraduate Research, Indianapolis, IN. **April 2004.**

M.A. Jones, J. Maurer, T. Vanadurongvan, A.J. Borgerding. “Exploration of Chromatographic Resolution Due to the Effect of Injection Pulse Duration.” Poster presentation at the Minnesota Academy of Sciences meeting, St. Paul, MN. **April 2003.**

Grants Co-Authored

“Evaluating Beneficial Bacteria Function following Engineered Nanoparticle Exposure,” National Science Foundation, **2011.**

Teaching Experience

Research Mentor (**2009 – present**) – Haynes Research Group, Department of Chemistry, University of Minnesota

- Directed Sarah Connolly’s research on reactive oxygen species (ROS) assay development to assess toxicity of TiO₂ nanoparticles
- Directed Jenna Christenson’s research on ROS assay development to assess toxicity of TiO₂ nanoparticles, which resulted in her authorship on an article submitted to *Environmental Science and Technology*
- Directed Gregory Gibson’s research on the development of *Shewanella oneidensis* as a nanotoxicity model organism

Mentorship Program for Aspiring Chemistry Teachers (MPACT) Participant (**Spring 2011**) – Department of Chemistry, University of Minnesota

- Observed class lectures, led two lectures, helped write and grade exams, and aided the implementation of POGIL activities within classroom lectures

Preparing Future Faculty – Teaching in Higher Education (**Fall 2010**) – Graduate School (GRAD 8101), University of Minnesota

- Completed coursework dealing with a wide range of higher education teaching-focused topics including pedagogical theory and curriculum development

Teaching Assistant (**2008 – 1 semester**) – Process Analytical Chemistry (CHEM 4121) laboratory TA, University of Minnesota

- Led pre-lab discussion, assisted students in learning laboratory techniques, designed and implemented grading rubric, held tutor and office hours

Teaching Assistant (**2007 – 1 semester**) – General Chemistry (CHEM 1011) laboratory TA, University of Minnesota

- Led pre-lab discussion, graded lab reports, held tutor and office hours

Chemistry Tutor (**2003-2006**) – Focus on General Chemistry concepts, University of St. Thomas

- Aided students in learning General Chemistry material

Service and Leadership Activities

Women In Science and Engineering (**2008-present**) – University of Minnesota

Student Workshop Committee (**2008-present**) – Department of Chemistry, University of Minnesota

Chemistry Day Outreach Event(**2009 & 2010**) – West 7th Community Center, St. Paul, Minnesota

Cool Chemistry Outreach (**2008-2009, 2011**) – Women in Science and Engineering, University of Minnesota

Dragon Fly TV participant (**2008**) – Public Broadcasting Service

ACS Student Affiliate Chapter President/Vice President (**2004-2006**) – University of St. Thomas

Professional Affiliations

American Chemical Society

Iota Sigma Pi – Honor Society of Women in Chemistry