

Education

PhD Candidate in Chemistry

Georgia Institute of Technology, Atlanta, GA

August 2007-Current; Expected Graduation: Spring 2014

Major: Analytical; GPA: 3.77 / 4.00

Awards: GIT Presidential Fellowship

Bachelor of Science in Chemistry

Wisconsin Lutheran College, Milwaukee, WI

August 2000 - May 2004

Graduated Cum Laude

Minors: Physics, Math; GPA: 3.65 / 4.00

Awards: WLC Dean's List, WLC Presidential Scholarship, Wisconsin Academic Excellence Scholarship, AAL Scholarship, Wal-Mart Employee Scholarship

Research Experience

Graduate Research Assistant

Georgia Institute of Technology, Atlanta, GA

Advisor: Dr. Thomas Orlando

December 2007-Current

Projects include exploration of the thermal and non-thermal formation, transport, and decomposition of water and other volatiles on synthetic and natural nanoparticles, including Apollo lunar samples.

Undergraduate Research Assistant

Wisconsin Lutheran College, Milwaukee, WI

Advisor: Dr. Daniel Ebeling

June 2003 - August 2003

A method for determining total phosphorus content in lake water and sediment samples was developed using UV-Vis spectroscopy as the sensor. A poster was presented by Dr. Daniel Ebeling at the 2004 Soil Science Society of America International Meeting, Seattle, WA.

Undergraduate Research Assistant

Wisconsin Lutheran College, Milwaukee, WI

Advisor: Dr. Keith Beyer

May 2002 - August 2002

Thin-film FT-IR spectra and DSC data were collected for phase identification and enthalpies of formation. Determined how many and which species of sulfuric acid hydrates were formed under stratospheric temperature conditions.

Leadership and Service

President, The Planetary Society at Georgia Tech (student chapter) 2011-2012

Treasurer, The Planetary Society at Georgia Tech (student chapter) 2012-2013

Instrument Chair, Atmospheres Subgroup Lead, and Far/Mid-IR Instrument Lead,

Planetary Science Summer School, Jet Propulsion Laboratory 2013

Invited Participant, Keck Institute for Space Studies Workshop: New Approaches to Lunar Ice Detection and Mapping, CalTech, 2013

Guest Blog, planetary.org/blogs April 2013

Session Chair, NASA Lunar Science Forum, Ames Research Center, July 2012

Organizer, Next Generation Lunar Scientists and Engineers, 2013

Session Chair, Virtual Lunar Graduate Conference, July 2013

Proposal Reviewer, Georgia Tech Presidential Undergraduate Research Award, Fall 2010, Spring 2011, Summer 2011, Fall 2012, Spring 2013

Student Volunteer, Space Shuttle Symposium, Georgia Tech, 2011

Student Mentor, Chem 2803: Special Topics: Science of Alternative Energy, 2010, 2013

Student Guide, Women in Chemistry high school student visitation day 2010

Publications

Poston, M. J., Alexandrov, A. B., Grieves, G. A., Hibbitts, C. A., Dyar, M. D., Orlando, T. M. (2013), "Water Interactions with Micronized Lunar Surrogates JSC-1A and Albite under Ultra-High Vacuum with Application to Lunar Observations," JGR – Planets, 118, 105, doi: 10.1002/jgre.20025.

Poston, M. J., Alexandrov, A. B., Sabo, D. E., Zhang, Z. J., Orlando, T. M., "UV Photon-Induced Water Decomposition on Zirconia Nanoparticles," J. Phys. Chem. C, submitted.

Hibbitts, C. A., Grieves, G. A., **Poston, M. J.**, Dyar, M. D., Alexandrov, A. B., Johnson, M. A., Orlando, T. M. (2011), "Thermal Stability of Water and Hydroxyl on the Surface of the Moon from Temperature-Programmed Desorption Measurements of Lunar Analog Materials," Icarus, 213, 64.

Grieves, G. A., **Poston, M. J.**, Alexandrov, A. B., Huber, C., Hibbitts, C. A., Dyar, M. D., Orlando, T. M., "Solar wind origin and Evolution of Hydroxyl on the Moon," GRL, in prep.

Dutta, S., Lantukh, D., Kosh, J., **Poston, M.**, "A Student Vision of the Future of U.S. Space Exploration," AIAA Space 2012 Conference & Exposition, AIAA 2012-5315, Pasadena, CA. doi 10.2514/6.2012-5315.

Daubar, I.J., Jens, E., **Poston, M.J.**, (and 17 coauthors), "Mission for Uranus Science and Exploration (MUSE): A NASA Planetary Science Summer School Enhanced New Frontiers Conceptual Mission Design," in prep.

Beyer, K. D., Hansen, A. R., **Poston, M.** (2003), "The Search for Sulfuric Acid Octihydrate," J. Phys. Chem. A, 107(12), 2025.

First Author Presentations

Invited Seminar, Lunar and Planetary Institute, Houston, TX, August 2013

Talk, Virtual Lunar Science Forum, NASA SSERVI, July 2013

Talk, Lunar Volatiles Workshop without Walls, NASA Lunar Science Institute, May 2013

Poster, 44th Lunar and Planetary Science Conference, The Woodlands, TX, March 2013

Talk, NASA Lunar Science Forum, Ames Research Center, July 2012

Talk, Lun Grad Con 2012, Ames Research Center, July 2012

Talk, 43rd Lunar and Planetary Science Conference, The Woodlands, TX, March 2012

Poster, AGU Fall Meeting, San Francisco, December 2011

Talk, NASA Lunar Science Forum, Ames Research Center, July 2011

Talk, Lun Grad Con 2011, Ames Research Center, July 2011

Talk, Planetary Science Seminar Series, Georgia Tech, March 2011, November 2013

Poster, 42nd Lunar and Planetary Science Conference, The Woodlands, TX, March 2011

Talk, John Hopkins University Applied Physics Laboratory, November 2010

Poster, Gordon Research Conference on Radiation Chemistry, Proctor Academy, July 2010

Industry Experience

Laboratory Specialist

Micromeritics Analytical Services, Norcross, GA

June 2004 – August 2007

- Collected data, maintained instrumentation, adapted methods, and analyzed results for physisorption and chemisorption surface analyses, and laser and sedimentation particle size analyses.
- Educated customers and trained new hires on scientific theory and proper operation of Micromeritics instrumentation.
- Initiated a study comparing equivalent spherical diameter results for non-spherical particles among various particle sizing techniques. This study was presented by Greg Thiele at Pittcon 2008.
- Served on Safety Team and Quality Improvement Team.

Marketing Intern

Thermo Electron Molecular Spectroscopy Division, Madison, WI

May 2002 - August 2002 and December 2002 - January 2003

- Performed beta testing on Thermo FT-IR and FT-NIR Spectrometers and Software in support of marketing and engineering staff.
- Collected spectra for an anti-terrorism ATR-FTIR library.

Teaching Experience

Teaching Assistant
Georgia Institute of Technology, Atlanta, GA
August 2007-May 2008
Chem 1313 -- Quantitative Analysis Laboratory
August 2013-December 2013
Chem 2211 – Quantitative Analysis Laboratory

Memberships

The Planetary Society
NextGen Lunar Scientists and Engineers (*Executive Member*)
Young Scientists for Planetary Exploration (*Executive Member*)
American Geophysical Union
American Chemical Society

Skills

Experimental Design

Design, construction, and maintenance of ultra-high vacuum equipment and chambers reaching 10^{-10} torr base pressure;
Programming and instrument interfacing in LabVIEW;

Measurement Techniques

Mass spectrometry; mass-selective ion beam; electron gun;
FT-IR; UV-Vis; Class 4 lasers; HPLC; GC; high-voltage electronics;
Gas adsorption surface area and porosity; mercury porosimetry; helium pycnometry;
dynamic light scattering particle sizing; sedimentation particle sizing;

Software Proficiencies

LabVIEW; EndNote; SigmaPlot;
Excel; Word; Power Point;
Windows (XP, 7, 8);