

KATHLEEN E. RYAN

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EDUCATION:

Doctorate of Philosophy, Chemistry, defended May 2009

Pennsylvania State University, University Park, PA 16802

Thesis Advisor: Professor Barbara J. Garrison

Thesis Title: "Molecular Dynamics Simulations of Energetic Particle Bombardment of Molecular Solids"

Bachelor of Science, Chemistry, May 2003

University of Massachusetts, Amherst, MA, 01003

RESEARCH AND ACADEMIC EXPERIENCE:

Graduate Research Assistant, Pennsylvania State University-University Park

- Advisor: Professor Barbara J. Garrison, 2004-2009
- Modeled particle bombardment and chemical reactions using molecular dynamics simulations.
- Used a coarse-grained approach to simplify potentials and investigate chemistry.
- Analyzed the effect of projectile type, energy, and angle of incidence on ejection yield and sample damage.

Teaching Assistant, Pennsylvania State University-University Park

- Supervisors: Professors Andrew Greenberg, Joseph Keiser, and Pshemak Maslak, 2003-2004
- Taught undergraduate general chemistry in laboratory and classroom settings.

Undergraduate Research Assistant, University of Massachusetts-Amherst

- Advisor: Professor Igor Kaltashov, 2002-2003
- Participated in protein digestion and MALDI mass spectrometry research.

Laboratory Assistant, New York State Department of Health-Albany

- Wadsworth Laboratories, Protein Production Facility, 2000
- Performed routine laboratory skills such as making solutions, running gels, and analyzing samples via UV-Vis spectrophotometry.

PUBLICATIONS:

8. Internal energy of molecules ejected due to energetic C₆₀ bombardment. B. J. Garrison, Z. Postawa, K. E. Ryan, J. C. Vickerman, R. P. Webb, and N. Winograd. *Anal. Chem.*, **2009**, *81*, 2260-2267.
7. Angle of incidence effects in a molecular solid. K. E. Ryan, E. J. Smiley, N. Winograd, and B. J. Garrison. *Appl. Surf. Sci.*, **2008**, *255*, 844-846.
6. Friction model to describe cluster bombardment. K. E. Ryan, M. F. Russo Jr., E. J. Smiley, Z. Postawa, and B. J. Garrison. *Appl. Surf. Sci.*, **2008**, *255*, 893-896.

5. Combined simulations and analytical model for predicting trends in cluster bombardment. M. F. Russo Jr., K. E. Ryan, B. Czerwinski, E. J. Smiley, Z. Postawa, and B. J. Garrison. *Appl. Surf. Sci.*, **2008**, *255*, 897-900.
4. Cluster Size Dependence and Yield Linearity in Cluster Bombardment Simulations of Benzene. K.E. Ryan and B. J. Garrison. *Anal. Chem.* **2008**, *80*, 6666-6670.
3. Energy Deposition Control during Cluster Bombardment: A Molecular Dynamics View. K. E. Ryan and B. J. Garrison. *Anal. Chem.* **2008**, *80*, 5302-5306.
2. Reaction Dynamics Following keV Cluster Bombardment. K. E. Ryan, I. Wojciechowski, and B. J. Garrison. *J. Phys. Chem. C.*, **2007**, *111*, 12822-12826.
1. Quadratic Friction Model for Cluster Bombardment of Molecular Solids. B. J. Garrison, K. E. Ryan, M. F. Russo Jr., E. J. Smiley, and Z. Postawa. *J. Phys. Chem. C.*, **2007**, *111*, 10135-10137.

POSTERS AND PRESENTATIONS:

4. K. E. Ryan, E. J. Smiley, N. Winograd, and B. J. Garrison. “**Angle of Incidence Effects for Cluster Bombardment of a Molecular Solid**”, SIMS XVI Conference, Kanazawa, JP, Oct. 29-Nov. 2, 2007. (*oral presentation*)
3. K. E. Ryan, M. F. Russo Jr., E. J. Smiley, Z. Postawa, and B. J. Garrison. “**Friction Model to Describe Cluster Bombardment**”, SIMS XVI Conference, Kanazawa, JP, Oct. 29-Nov. 2, 2007. (*poster presentation*)
2. K. E. Ryan and B. J. Garrison. “**Reaction Dynamics Following keV Cluster Bombardment**”, 20th Annual Workshop on SIMS, Key Largo, FL, May 15-18, 2007. (*oral presentation*)
1. K. E. Ryan and B. J. Garrison. “**Energetic Particle Bombardment, Plume Formation and Chemical Reactions**”, 230th ACS National Meeting, The American Chemical Society, Washington D.C., Aug. 28-Sept. 1, 2005. (*poster presentation*)

AWARDS AND FELLOWSHIPS:

- Braucher Fellowship, 2007, 2008
- SIMS XVI Conference Student Award, 2007
- SIMS Workshop Student Travel Award, 2007
- PSU Chemistry Graduate Student Travel Award, Spring 2007, Fall 2007
- Roberts Graduate Fellowship, 2003

COMPUTER SKILLS:

- Programming: Fortran 90/95, AWK, HTML, Perl, C/C++(*beginner*)
- Operating Systems: Unix, Linux, Windows, Mac OS

PROFESSIONAL ORGANIZATIONS AND SERVICE:

- The American Chemical Society
- The American Physical Society
- Graduate Women in Science – The Nu Chapter of Sigma Delta Epsilon
 - Webmaster, 2008-2009

- Girl Scout Workshop, Oct. 12, 2008
 - Planned educational activities for girls to get badges in Oceanography