

Drew Meyer

John Teagle Professorial Fellow in Chemistry and Instructor
Case Western Reserve University
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Education

- 2010 PhD, **Stanford University** Stanford, California
PhD Topic: Resonant X-ray Emission Spectroscopy
Research Advisor: Kelly Gaffney
- 2004 Bachelor of Science, **Baldwin-Wallace College** Berea, Ohio

Teaching Experience

- 2013-present **John Teagle Professorial Fellow and Instructor of Chemistry**
Case Western Reserve University
Department of Chemistry – Cleveland, Ohio
- Principles of chemistry I, II, and lab (CHEM105, CHEM105, CHEM113)
 - Principles of chemistry for engineers (CHEM 111)
 - Introductory physical chemistry II (CHEM 302)
- 2012-2013 **Visiting Assistant Professor** – Franklin & Marshall College
Department of Chemistry – Lancaster, Pennsylvania
- General chemistry lecture and lab (CHM111 and CHM112)
 - Undergraduate research working with x-ray spectroscopy
- 2010-2012 **Visiting Assistant Professor** - Oberlin College
Department of Chemistry and Biochemistry Oberlin, Ohio
- General chemistry lecture and lab (Chem 101 and Chem 102- mostly incoming freshman)
 - Physical chemistry (Chem 339- Quantum and Kinetics- upper class chemistry majors)
 - Environmental chemistry (Chem 051- non-science majors)
 - Undergraduate research working with x-ray spectroscopy
- 2007-2009 **Math and Chemistry Tutor** - The Stutors (private tutoring firm)
Palo Alto, California
- High school chemistry – sophomore and AP levels
 - High school math- algebra, geometry, and calculus
- 2004-2005 **Teaching Assistant** - Stanford University
Department of Chemistry Palo Alto, California
- Physical chemistry lab

- General chemistry (Chem 31X- full year general chemistry compressed into a semester)
- Organic chemistry (Chem 33- first semester organic chemistry)

2001-2004 **Chemistry and Math Tutor** - Baldwin-Wallace College
Learning Center Berea, OH

- General chemistry
- All College math through drop-in tutoring

2003 **Analytical Chemistry Lab Assistant** – Baldwin-Wallace College
Department of Chemistry Berea, OH

Research Experience

2012-2013 **Franklin & Marshall College** Research PI

- Extended x-ray absorption fine structure studies on molybdate compounds on pyrite
- Extended x-ray absorption fine structure studies on lead chelated by melanin
- Experimental data collection at APS with Franklin & Marshall student

2010-2012 **Oberlin College** Research PI

- Extended x-ray absorption fine structure studies on lead chelated by melanin
- Data recorded at Advanced Photon Source with Oberlin undergraduate student
- Computational project calculating x-ray emission and pre-edge x-ray absorption spectra.

2007-2010 **SLAC National Accelerator Laboratory** Research Assistant

- Resonant inelastic x-ray scattering studies on transition metal species in the valence region
- Ultrafast laser spectroscopy on transition metal compounds
- Air free inorganic synthesis methods and x-ray absorption studies on analogs of the Creutz-Taube ion
- Fabrication and use of optically transparent thin layer electrode cell for spectroelectrochemistry

2003-2004 **Baldwin-Wallace College** Research Assistant

- Kinetic assay experiments via UV/Vis spectroscopy on modified bioinorganic molecules
- Modified commercial printer cartridges to print metal ion solutions followed by chemical reduction to prepare conductive patterns on polymer substrates

2003 **Texas A&M University** REU Summer Intern

- Raman and FTIR experiments on amino acid model complexes in gaseous form

Successful Competitive Research Grants and Proposals

2010 **Advanced Photon Source** Beamtime proposal

- Topic: Structural Study on Lead Chelating Properties of Natural and Synthetic Eumelanin Analogues
Position: Research Principal Investigator
Award: Twelve 8-hour shifts of x-ray experimental time
- 2010 **Oberlin College** Summer Student Research Assistant
Topic: Structural Study on Lead Chelating Properties of Natural and Synthetic Eumelanin Analogues
Position: Research Principal Investigator
Award: \$3000
- 2008 **SLAC National Accelerator Center** Beamtime proposal
Topic: Characterization of Charge Transfer Dynamics for Transition Metal Complexes with Hard Resonant Inelastic X-ray Scattering
Position: Research Assistant
Award: Forty 9-hour shifts of x-ray experimental time
- 2007 **Advanced Photon Source** Beamtime proposal
Topic: Time Resolved X-ray Spectroscopy and Diffraction Studies of Charge, Spin, and Structure During Photo-induced Phase Transitions
Position: Research Assistant
Award: Twenty-four 8-hour shifts of x-ray experimental time
- 2005 **SLAC National Accelerator Center** Beamtime proposal
Position: Research Assistant
Topic: X-ray Emission and Absorption Characterization of Mixed-Valence Iron Complexes
Award: Twenty-one 8 hour beamtime shifts

Professional Affiliations

American Chemical Society

Awards and Honors

- 2003 ACS division of Analytical Chemistry undergraduate award
2003 Lubrizol Chemistry Award
2002 Dayton C. Miller Honor Society
2001 Alpha Lambda Honors Society
2000 CRC Freshman Chemistry Award
2000 Presidential Scholarship
2015 Carl F. Wittke Award Nominee

Publications

Research Articles

The Effect of a Thiol-Containing Organic Molecule on Molybdenum Adsorption onto Pyrite

Freund, C., Wishard, A., Brenner, R., Sobel, M., Mizelle, J., Kim, A., Meyer, D.A., Morford, J.L., *Geochimica et Cosmochimica Acta*. 2015, doi: <http://dx.doi.org/10.1016/j.gca.2015.11.015>

Tracking excited-state charge and spin dynamics in iron coordination complexes

W. Zhang, R. Alonso-Mori, U. Bergmann, C. Bressler, M. Chollet, A. Galler, W. Gawelda, R. G. Hadt, R. W. Hartsock, T. Kroll, K. S. Kajar, K. Kubicek, H. T. Lemke, H. W. Liang, D. A. Meyer, M. M. Nielsen, C. Purser, J. S. Robinson, E. I. Solomon, Z. Sun, D. Sokaras, T. B. van Driel, G. Vanko, T. Weng, D. Zhu, and K. J. Gaffney. *Nature*. 2014, 509, 345-348.

Characterization of Charge Transfer Excitations in Hexacyanomanganate(III) with Mn K-Edge Resonant Inelastic X-ray Scattering

D. A. Meyer, U. Bergmann, X. Zhang, and K. J. Gaffney. *J. Chem. Phys.* **2010**, 132, 134502.

X-ray Diffuse Scattering Measurements of Nucleation Dynamics at Femtosecond Resolution

A. M. Lindenberg, S. Engemann, K. J. Gaffney, K. Sokolowski-Tinten, J. Larsson, P. B. Hillyard, D. A. Reis, D. M. Fritz, J. Arthur, R. A. Akre, M. J. George, A. Deb, P. H. Bucksbaum, J. Hajdu, D. A. Meyer, M. Nicoul, C. Blome, Th. Tschentscher, A. L. Cavalieri, R.W. Falcone, S. H. Lee, R. Pahl, J. Rudati, P. H. Fuoss, A. J. Nelson, P. Krejčík, D. P. Siddons, P. Lorazo, and J. B. Hastings. *Phys. Rev. Lett.* **2008**, 100, 135502.

Carrier Dependent Stability of a Semiconductor Lattice Measured with Femtosecond X-ray Diffraction

K. J. Gaffney, P. B. Hillyard, A. M. Lindenberg, S. Engemann, A. Deb and D. A. Meyer *Springer Series in Chemical Physics* **2007**, 88, 710-712.

Ultrafast bond softening in bismuth: Mapping a solid's interatomic potential with X-rays

D. M. Fritz, D. A. Reis, B. Adams, R. A. Akre, J. Arthur, C. Blome, P. H. Bucksbaum, A. L. Cavalieri, S. Engemann, S. Fahy, R. W. Falcone, P. H. Fuoss, K. J. Gaffney, M. J. George, J. Hajdu, M. P. Hertlein, P. B. Hillyard, M. Horn-von Hoegen, M. Kammler, J. Kaspar, R. Kienberger, P. Krejčík, S. H. Lee, A. M. Lindenberg, B. McFarland, D. Meyer, T. Montagne, E. D. Murray, A. J. Nelson, M. Nicoul, R. Pahl, J. Rudati, H. Schlarb, D. P. Siddons, K. Sokolowski-Tinten, Th. Tschentscher, D. von der Linde and J. B. Hastings *Science* **2007**, 315, 633-636.

Carrier-density-dependent lattice stability in InSb

P. B. Hillyard, K. J. Gaffney, A. M. Lindenberg, S. Engemann, R. A. Akre, J. Arthur, C. Blome, P. H. Bucksbaum, A. L. Cavalieri, A. Deb, R. W. Falcone, D. M. Fritz, P. H. Fuoss, J. Hajdu, P. Krejčík, J. Larsson, S. H. Lee, D. Meyer, A. J. Nelson, R. Pahl, D. A. Reis, J. Rudati, D. P. Siddons, K. Sokolowski-Tinten, D. von der Linde and J. B. Hastings. *Phys. Rev. Lett.* **2007**, 98, 125501.

Conference Presentations

Active Learning Impact on Student Attitudes Toward Chemistry in General Chemistry

D. A. Meyer and R. Srinivasan, Ohio Project Kaleidoscope Inaugural Conference, Poster 7, 2015.

Student derived experiment procedure in a flipped lab experience

R. Srinivasan, D. A. Meyer, 248th American Chemical Society National Meeting and Exposition, Poster CHED 97; 2014.

Study of electron-transfer in transition metal complexes with valence resonant inelastic x-ray scattering

*D. Meyer, U. Bergmann, and K. Gaffney, 240th American Chemical Society National Meeting and Exposition, Poster AEI 048, 2010.

Electron Dynamics Extracted from Resonant Inelastic X-ray Scattering of Thermal-Induced Phase Transitions

*D. A. Meyer, K. J. Gaffney, U. Bergmann, J. D. Kaspar, A. Deb, H. Tokoro, S. Ohkoshi; 2008 LCLS/SSRL User's Meeting and Workshops, Poster MAT-01, 2008.

Thermal Phase Transition in RbFeMn(CN)₆ Studied by X-ray Emission Spectroscopy

*A. Deb, D. Meyer, J. Kaspar, U. Bergmann, H. Tokoro, S. Ohkoshi, and K. Gaffney, 6th International IXS conference, Poster D65, 2007.