

Keith T. Kuwata

Curriculum Vitae

Department of Chemistry
Macalester College
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EDUCATION

- Ph.D. in Chemistry**, California Institute of Technology 1998
B.S. in Chemistry with High Distinction, Harvey Mudd College 1991

ACADEMIC EMPLOYMENT

- Associate Professor of Chemistry**, Macalester College 2006 to Present
Assistant Professor of Chemistry, Macalester College 2000 to 2006
Postdoctoral Scholar, University of California, Los Angeles 1998 to 2000
Lecturer, University of California, Los Angeles 1999 to 2000

RESEARCH INTERESTS

Using quantum chemistry and statistical rate theory to characterize reaction mechanisms, especially of chemically activated species in the atmosphere and in combustion; using atomic spectrometry to analyze environmental samples; working extensively with undergraduates and experimental collaborators.

RESEARCH PUBLICATIONS (* indicates Macalester undergraduate co-author)

1. "Infrared Spectra of Mass-Selected $\text{Br}^- (\text{NH}_3)_n$ and $\text{I}^- (\text{NH}_3)_n$ Clusters." Duncan A. Wild, Keith T. Kuwata, Mitchio Okumura, and Evan J. Bieske, *Journal of Physical Chemistry A*, **2009**, submitted.
2. "Quantum Chemical and RRKM/Master Equation Studies of Isoprene Ozonolysis: Methacrolein and Methacrolein Oxide." Keith T. Kuwata and Lukas C. Valin,* *Chemical Physics Letters* **2008**, *451*, 186-191.
3. "Electronic Structure of TaO and its Hyperfine Structure." Kara J. Manke,* Tyson R. Vervoort,* Keith T. Kuwata, and Thomas D. Varberg, *Journal of Chemical Physics* **2008**, *128*, 104302/1-104302/6.
4. "Computational Studies of Intramolecular Hydrogen Atom Transfers in the β -Hydroxyethylperoxy and β -Hydroxyethoxy Radicals." Keith T. Kuwata, Theodore S. Dibble, Emily Sliz,* and Erin B. Petersen,* *Journal of Physical Chemistry A* **2007**, *111*, 5032-5042.
5. "Quantum Chemical and Master Equation Studies of the Methyl Vinyl Carbonyl Oxides Formed in Isoprene Ozonolysis." Keith T. Kuwata, Lukas C. Valin,* and Amber D. Converse,* *Journal of Physical Chemistry A* **2005**, *109*, 10710-10725.

6. "Theoretical Studies of the Reaction of Hydroperoxy Radicals (HO_2) with Ethyl Peroxy ($\text{CH}_3\text{CH}_2\text{O}_2$), Acetyl Peroxy ($\text{CH}_3\text{C}(\text{O})\text{O}_2$), and Acetonyl Peroxy ($\text{CH}_3\text{C}(\text{O})\text{CH}_2\text{O}_2$) Radicals." Alam S. Hasson, Keith T. Kuwata, Manuel C. Arroyo, and Erin B. Petersen,* *Journal of Photochemistry and Photobiology A: Photochemistry* **2005**, *176*, 218-230.
7. "Quantum Chemical and Master Equation Simulations of the Oxidation and Isomerization of Vinyloxy Radicals." Keith T. Kuwata, Alam S. Hasson, Ray V. Dickinson, Erin B. Petersen,* and Lukas C. Valin,* *Journal of Physical Chemistry A* **2005**, *109*, 2514-2524.
8. "Computational Studies of the Chemistry of Syn Acetaldehyde Oxide." Keith T. Kuwata, Kristen L. Templeton,* and Alam S. Hasson, *Journal of Physical Chemistry A* **2003**, *107*, 11525-11532.
9. "A Comparative Study of Interatomic Potentials for Copper and Aluminum Gas Phase Sputter Atom Transport Simulations." Keith T. Kuwata, Rachel I. Erickson,* and James R. Doyle, *Nuclear Instruments and Methods in Physics Research B* **2003**, *201*, 566-570.
10. "Reaction of Criegee Intermediates with Water Vapor – An Additional Source of OH Radicals in Alkene Ozonolysis?" Alam S. Hasson, Myeong Y. Chung, Keith T. Kuwata, Amber D. Converse,* Debra Krohn, and Suzanne E. Paulson, *Journal of Physical Chemistry A* **2003**, *107*, 6176-6182.
11. "Mechanism of Ene Reactions of Singlet Oxygen. A Two-Step No-Intermediate Mechanism." Daniel A. Singleton, Chao Hang, Michael J. Szymanski, Matthew P. Meyer, Andrew G. Leach, Keith T. Kuwata, Jenny S. Chen, Alexander Greer, Christopher S. Foote, and K. N. Houk, *Journal of the American Chemical Society* **2003**, *125*, 1319-1328.
12. "Description of the Valence Molecular Orbitals of ClONO_2 from He(I) Photoelectron Spectroscopy and Ab Initio Calculations." Matthew S. Johnson, Keith T. Kuwata, and Mitchio Okumura, *Asian Chemistry Letters* **2003**, *7*, 21-29.
13. "Conformation-Dependent State Selectivity in O-O Cleavage of ONOONO : An 'Inorganic Cope Rearrangement' Helps Explain the Observed Negative Activation Energy in the Oxidation of Nitric Oxide by Dioxygen." Leif P. Olson, Keith T. Kuwata, Michael D. Bartberger, and K. N. Houk, *Journal of the American Chemical Society* **2002**, *124*, 9469-9475.
14. "Production of Stabilized Criegee Intermediates and Peroxides in the Gas Phase Ozonolysis of Alkenes: 2. Asymmetric and Biogenic Alkenes." Alam S. Hasson, Andy W. Ho, Keith T. Kuwata, and Suzanne E. Paulson, *Journal of Geophysical Research* **2001**, *106*, 34143-34153.
15. "The Pressure Dependence of the OH Radical Yield from Ozone-Alkene Reactions." Jill D. Fenske, Alam S. Hasson, Suzanne E. Paulson, Keith T. Kuwata, Andy Ho, and K. N. Houk, *Journal of Physical Chemistry A* **2000**, *104*, 7821-7833.

16. "OH Radical Yields from the Ozone Reaction with Cycloalkenes." Jill D. Fenske, Keith T. Kuwata, K. N. Houk, and Suzanne E. Paulson, *Journal of Physical Chemistry A* **2000**, *104*, 7246-7254.
17. "Vibrational Spectroscopy of the $\text{Cl}^-(\text{H}_2\text{O})_n$ Anionic Clusters, $n = 1-5$." Jong-Ho Choi, Keith T. Kuwata, Yi-Bin Cao, and Mitchio Okumura, *Journal of Physical Chemistry A* **1998**, *102*, 503-507.
18. "Protonation of Chlorine Nitrate and Nitric Acid: Identification of Isomers by Vibrational Spectroscopy." Jong-Ho Choi, Keith T. Kuwata, Yi-Bin Cao, Bernd-Michael Haas, and Mitchio Okumura, *Journal of Physical Chemistry A* **1997**, *101*, 6753-6760.
19. "Vibrational Spectroscopy of $\text{I}^-(\text{H}_2\text{O})_n$." Matthew S. Johnson, Keith T. Kuwata, Chi-Kin Wong, and Mitchio Okumura, *Chemical Physics Letters* **1996**, *260*, 551-557.
20. "Reactions of Chloride Ions with Chlorine Nitrate and Its Implications for Stratospheric Chemistry." Bernd-Michael Haas, Kevin C. Crellin, Keith T. Kuwata, and Mitchio Okumura, *Journal of Physical Chemistry* **1994**, *98*, 6740-6745.
21. "Vibrational Spectroscopy of $\text{NO}^+(\text{H}_2\text{O})_n$: Evidence for the Intracluster Reaction $\text{NO}^+(\text{H}_2\text{O})_n \rightarrow \text{H}_3\text{O}^+(\text{H}_2\text{O})_{n-2}(\text{HONO})$ at $n \geq 4$." Jong-Ho Choi, Keith T. Kuwata, Bernd-Michael Haas, Yibin Cao, Matthew S. Johnson, and Mitchio Okumura, *Journal of Chemical Physics* **1994**, *100*, 7153-7165.
22. "Chlorophyll Fluorescence Measurements to Assess the Competition of Substituted Anthraquinones for the Q_B Binding Site." Kerry K. Karukstis, Martin A. Berliner, Christopher J. Jewell, and Keith T. Kuwata, *Biochimica et Biophysica Acta* **1990**, *1020*, 163-168.
23. "Analysis of π Charge Distribution in Substituted Anthraquinones to Assess Affinity for the Q_B Binding Site." Kerry K. Karukstis, Martin A. Berliner, and Keith T. Kuwata, *Biochimica et Biophysica Acta* **1990**, *1020*, 169-175.

PRESENTATIONS

A. Invited Talks

1. "Computational Studies of Reactive Intermediates in the Troposphere." Department of Chemistry, Reed College, Portland, OR, 13 November 2008.
2. "Computational Studies of Reactive Intermediates in the Troposphere." Department of Chemistry, Gustavus Adolphus College, Saint Peter, MN, 19 September 2008.
3. "Computational Studies of the Chemistry and Thermalization of Activated Species." Department of Chemistry, Occidental College, Los Angeles, CA, 4 December 2006.
4. "Computational Studies of the Fates of Ozonolysis Intermediates in the Troposphere." Department of Chemistry, College of Saint Benedict/Saint John's University, Saint Joseph, MN, 16 March 2006.

5. "Quantum Chemical Studies of Ozone-Derived Organic Aerosol Precursors." Atmospheric Aerosol Aging Workshop, Telluride Science Research Center, Telluride, CO, 11 August 2004.
6. "Oxidation Reactions in the Troposphere." Research Site for Educators in Chemistry, University of Minnesota—Twin Cities, Minneapolis, MN, 7 July 2004.
7. "Computational Studies of Chemically Activated Ozonolysis Intermediates." 227th National Meeting, American Chemical Society, Division of Computers in Chemistry, Anaheim, CA, 31 March 2004.
8. "Quantum Chemical Studies of Oxidation Reactions in the Troposphere." Department of Chemistry, Hamline University, Saint Paul, MN, 1 October 2003.
9. "Experimental and Computational Studies of Stratospheric Ozone Depletion." Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 16 August 2003.
10. "Benefits of Teaching During a Research-Focused Postdoc." 225th National Meeting, American Chemical Society, Division of Chemical Education, New Orleans, LA, 26 March 2003.

B. Contributed Presentations at National or International Meetings

11. "Computational Modeling of Atmospheric Reactions of Carbonyl Oxides." 237th National Meeting, American Chemical Society, Division of Physical Chemistry, Salt Lake City, UT, 25 March 2009. (poster)
12. "Transition State Theory Rate Constants for Intramolecular Hydrogen Transfer Reactions in Oxygenated Radicals." 235th National Meeting, American Chemical Society, Division of Computers in Chemistry, New Orleans, LA, 9 April 2008. (talk)
13. "Introducing Students to Research in Computational Kinetics." 232nd National Meeting, American Chemical Society, Division of Chemical Education, San Francisco, CA, 13 September 2006. (talk)
14. "Computational Studies of Isoprene and Cycloalkene Ozonolysis." 231st National Meeting, American Chemical Society, Division of Physical Chemistry, Atlanta, GA, 27 March 2006. (talk)
15. "Quantum Chemical and Master Equation Simulations of Isoprene Ozonolysis." 229th National Meeting, American Chemical Society, Division of Physical Chemistry, San Diego, CA, 16 March 2005. (poster)
16. "Theoretical Studies of Tunneling in Alkoxy and Alkylperoxy Radicals." 229th National Meeting, American Chemical Society, Division of Physical Chemistry, San Diego, CA, 16 March 2005. (poster)
17. "Computational Studies of Alkene Ozonolysis Intermediates." 223rd National Meeting, American Chemical Society, Division of Physical Chemistry, Orlando, FL, 11 April 2002. (talk)

18. "Computational Studies of Alkene Ozonolysis Intermediates." Gordon Research Conference in Atmospheric Chemistry, Salve Regina University, Newport, RI, 20 June 2001. (poster)
19. "Computational Studies of Alkene Ozonolysis." 219th National Meeting, American Chemical Society, Division of Physical Chemistry, San Francisco, CA, 29 March 2000. (poster)
20. "Computational Studies of the Gas-Phase Ozonolysis of 1-Alkenes." 217th National Meeting, American Chemical Society, Division of Organic Chemistry, Anaheim, CA, 23 March 1999. (talk)
21. "Vibrational Predissociation Spectroscopy of $\text{Cl}^-(\text{H}_2\text{O})_n$ ($n=1-5$)." Fiftieth Annual International Symposium on Molecular Spectroscopy, The Ohio State University, Columbus, OH, 15 June 1995. (talk)
22. "*Ab Initio* Calculations of Negative Ion Reactions of Chlorine Reservoir Species." Fall National Meeting, American Geophysical Union, Atmospheric Sciences Section, San Francisco, CA, 8 December 1993. (talk)

C. Contributed Presentations at Regional or Local Meetings

23. "Quantum Chemistry and Computational Kinetics of the Hydrogen Shift Reactions in the β -Hydroxyethylperoxy and β -Hydroxyethoxy Radicals." 39th Midwest Theoretical Chemistry Conference, Indiana University, Bloomington, IN, 28 June 2007. (poster)
24. "Computational Studies of Alkene Ozonolysis Intermediates." 34th Midwest Theoretical Chemistry Conference, University of Minnesota—Twin Cities, Minneapolis, MN, 5 October 2001. (poster)
25. "Computational Studies of Alkene Ozonolysis." Seventeenth Annual Symposium on Kinetics and Photochemical Processes in the Atmosphere, University of California, Irvine, CA, 29 February 2000. (poster)
26. "Computational Studies of the Ozonolysis of 1-Alkenes." Sixteenth Annual Symposium on Kinetics and Photochemical Processes in the Atmosphere, California State University, Los Angeles, CA, 18 February 1999. (talk)
27. "Vibrational Spectroscopy of Solvated Chloride Clusters." American Chemical Society Thirty-Third Western Regional Meeting (Pacific Conference on Chemistry and Spectroscopy), Irvine, CA, 23 October 1997. (talk)
28. "*Ab Initio* Calculations of Negative Ion Reactions of Chlorine Reservoir Species." Eleventh Annual Symposium on Kinetics and Photochemical Processes in the Atmosphere, DGA and Associates, Ventura, CA, 18 January 1994. (talk)

D. Off-Campus Presentations by My Research Students

1. Matthew R. Hermes: "Study of Criegee Intermediate and Sulfur Dioxide Reaction Paths Using Quantum Chemical and RRKM Methods." Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 29 July 2009.

2. Matthew J. Carlson: “*Trans*-2-Butene Ozonolysis: Mechanism and Atmospheric Implications.” Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 27 July 2009.
3. Cheryl K. Zogg: “Mechanistic Explorations of the Carbonyl Oxide-Nitrogen Dioxide Reaction.” Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 27 July 2009.
4. Amanda K. Hulke: “Determining Trace Selenium Concentrations Using Hydride Generation: A Study on Mercury Sequestration with Common Loons.” 2008 Midstates Consortium for Math and Science Undergraduate Research Symposium, Washington University in Saint Louis, Saint Louis, MO, 1 November 2008.
5. Matthew R. Hermes: “Computational Modeling of Reactions of Substituted Criegee Intermediates.” 2008 MERCURY Conference on Undergraduate Computational Chemistry, Hamilton College, Clinton, NY, 4 August 2008.
6. Amanda K. Hulke: “Quantifying Mercury Content in Loon Feathers Using Cold Vapor Atomic Absorption Spectrometry.” 2007 Midstates Consortium for Math and Science Undergraduate Research Symposium, University of Chicago, Chicago, IL, 11 November 2007.
7. Emily J. Guinn: “Computational Analysis of Bimolecular Processes Involving Carbonyl Oxides in the Atmosphere.” 2007 Midstates Consortium for Math and Science Undergraduate Research Symposium, University of Chicago, Chicago, IL, 10 November 2007.
8. Ilhan Findik: “Effect of Ammonium Oxides on Mechanistic Pathways of Ozonolysis.” Midwest Undergraduate Computational Chemistry Conference, University of Illinois, Urbana, IL, 1 August 2007.
9. Emily J. Guinn: “A Computational Analysis of Bimolecular Processes for Atmospheric Carboxylic Acid Formation.” Midwest Undergraduate Computational Chemistry Conference, University of Illinois, Urbana, IL, 1 August 2007.
10. Julia S. Stanfield: “Probing the Hyperconjugative Captodative Effect by Quantum Chemistry.” 2006 Pew Undergraduate Research Symposium in Mathematics and the Physical Sciences, Washington University, Saint Louis, MO, 4 November 2006.
11. Emily Sliz: “Oxidation of Ethene in the Troposphere: Fate of the β -Hydroxyethylperoxy Radical.” Midwest Undergraduate Computational Chemistry Conference, Iowa State University, Ames, IA, 2 August 2006.
12. Julia S. Stanfield: “Probing the Hyperconjugative Captodative Effect by Quantum Chemistry.” Midwest Undergraduate Computational Chemistry Conference, Iowa State University, Ames, IA, 2 August 2006.
13. Brianna J. Kujala: “Computational Studies of the Atmospheric Impact of Cycloalkene Ozonolysis.” Minnesota Academy of Science, Winchell Undergraduate Research Symposium, Macalester College, Saint Paul, MN, 29 April 2006.
14. Brianna J. Kujala: “Computational Studies of the Atmospheric Impact of Cycloalkene Ozonolysis.” 2005 Pew Undergraduate Research Symposium in

- Mathematics and the Physical Sciences, The University of Chicago, Chicago, IL, 6 November 2005.
15. Julia S. Stanfield: "Probing the Hyperconjugative Captodative Effect by Quantum Chemistry." Midwest Undergraduate Computational Chemistry Conference, University of Minnesota, Minneapolis, MN, 12 July 2005.
 16. Brianna J. Kujala: "Computational Studies of the Atmospheric Impact of Cycloalkene Ozonolysis." Midwest Undergraduate Computational Chemistry Conference, University of Minnesota, Minneapolis, MN, 11 July 2005.
 17. Erin B. Petersen: "Acetonylperoxy Radical: A Computational Examination and Comparison of Molecular Pathways of Reaction with HO₂ Radicals in the Atmosphere." Midwest Undergraduate Computational Chemistry Conference, University of Wisconsin, Madison, WI, 3 August 2004.
 18. Lukas C. Valin: "Using Quantum Chemical Methods and RRKM Calculations to Determine Hydroxyl Radical Yield in the Ozonolysis of Isoprene." Midwest Undergraduate Computational Chemistry Conference, University of Wisconsin, Madison, WI, 3 August 2004.
 19. Lukas C. Valin: "Finding Possible Mechanistic Pathways for Dimethyl- and Methyl-Vinyl-Substituted Carbonyl Oxides." 2003 Pew Undergraduate Research Symposium in Mathematics and the Physical Sciences, The University of Chicago, Chicago, IL, 15 November 2003.
 20. Erin B. Petersen: "Conformation in Ozonolysis." Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 15 August 2003.
 21. Lukas C. Valin: "Finding Possible Mechanistic Pathways for Dimethyl- and Methyl-Vinyl-Substituted Carbonyl Oxides." Midwest Undergraduate Computational Chemistry Conference, Northwestern University, Evanston, IL, 15 August 2003.
 22. Amber D. Converse: "Ozonolysis: Studying the Earth's Atmosphere Using Computational Chemistry." 2002 Pew Undergraduate Research Symposium in Mathematics and the Physical Sciences, Washington University, Saint Louis, MO, 3 November 2002.

AWARDS AND GRANTS

A. Selected External Awards and Grants

- National Science Foundation Grant 2008-2010
("Directed Reactions of Carbonyl Oxides: A New Approach to Ozonolysis"; \$360,000; co-PI with Professor Patrick H. Dussault, University of Nebraska-Lincoln)

- National Computational Science Alliance Award 2007
("Computational Modeling of Carbonyl Oxides in the Troposphere"; 42,291 service units on the IBM p690 computer at the University of Illinois)
- Henry Dreyfus Teacher-Scholar Award, Dreyfus Foundation 2006-2011
(\$60,000 for computational studies of oxidation intermediates)
- Type B Grant, American Chemistry Society Petroleum Research Fund 2006-2010
("Computational Studies of the Atmospheric Chemistry of Alkene Ozonolysis Intermediates"; \$50,000)
- National Science Foundation Major Research Instrumentation Grant 2005-2009
("Acquisition of a Computer Cluster for Research, Research Training, and Teaching"; \$379,609; co-PI with colleagues at Carleton, Gustavus Adolphus, and Hope Colleges)
- Sabbatical Funding, National Science Foundation Research Site for Educators in Chemistry, University of Minnesota—Twin Cities 2003-2004
(\$32,187 to support pre-tenure sabbatical visit in the laboratory of Professor Donald G. Truhlar)
- Type G Grant, American Chemistry Society Petroleum Research Fund 2002-2004
("Quantum Chemical Studies of Isoprene Ozonolysis Intermediates"; \$35,000)
- National Science Foundation Graduate Research Fellowship 1991 - 1994
(\$42,000 stipend)

B. Macalester College Competitive Grants

- Violet Olson Beltmann Fund 2002 - 2007
(\$31,860 cumulative for student stipends and research expenses)
- Student-Faculty Summer Research Collaboration Award 2006 - 2007
(\$8700 cumulative for student stipends and research expenses)
- Supplemental Faculty Travel and Research Grant 2002
(\$1100 for conference expenses)
- Wallace Research Grant 2001
(\$3300 as a summer stipend)

TEACHING EXPERIENCE

A. At Macalester College

- General Chemistry I Fall 2000, 2001, 2004, 2005
- General Chemistry I Lab Fall 2002, 2004, 2005, 2008

- General Chemistry II Spring 2001, 2002, 2006
- General Chemistry II Lab Spring 2001, 2002
- Accelerated General Chemistry Fall 2004, 2007, 2008, 2009
- Accelerated General Chemistry Lab Fall 2008, 2009
- Analytical Chemistry Spring 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2009
- Analytical Chemistry Lab Spring 2001, 2002, 2003, 2005, 2006, 2007, 2009
- Physical Chemistry I Fall 2007
- Physical Chemistry I Lab Fall 2001, 2002, 2004, 2005
- Physical Chemistry II Spring 2003, 2008
- Physical Chemistry II Lab Spring 2003, 2008
- Instrumental Analysis Fall 2000, 2001, 2002
- Instrumental Analysis Lab Fall 2000, 2001, 2002
- Computational Chemistry Spring 2007, 2009
- Environmental Chemistry Fall 2009
- Independent Projects (Student Research) Fall 2000, 2003, 2005, 2007, 2008, 2009
January 2001, 2005, 2006, 2008, 2009
Spring 2001, 2005, 2006, 2007, 2008, 2009

B. At the University of California, Los Angeles

- General Chemistry I Fall 1999
- General Chemistry II Winter 2000

SERVICE

A. Work as a Reviewer

- Journals (Number of Manuscripts): *Journal of Physical Chemistry* (28), *Journal of the American Chemical Society* (2), *Journal of Chemical Physics* (3), *Chemical Physics Letters* (9), *Journal of Organic Chemistry* (1), *Environmental Science and Technology* (1), *Advances in Quantum Chemistry* (1), *Canadian Journal of Chemistry* (1), *Theoretical Chemical Accounts* (5), *Journal of Undergraduate Chemistry Research* (1)
- National Science Foundation Panelist, CCLI Type 1 Proposals, July 2009.
- Funding Agencies (Number of Proposals): Petroleum Research Fund, American Chemical Society (2), National Science Foundation (2), Kentucky Science and Engineering Foundation (1)
- External Reviewer, Tenure File (2006, 2009)
- Books: Peter Atkins and Loretta Jones, *Chemical Principles*, 5th Edition, W. H. Freeman, 2008; Petra Van Koppen and Richard Watts, *General Chemistry for the*

21st Century, W. H. Freeman, 200x; Thomas Engel and Philip Reid, *Thermodynamics, Statistical Thermodynamics, and Kinetics*, Benjamin Cummings, 2006; Raymond Chang, *Essential Chemistry*, 2nd Edition, McGraw-Hill, 2002.

B. Other Professional Service

- Reader, Advanced Placement Examination in Chemistry, University of Nebraska-Lincoln, 2008 and 2009
- Mentor, Mellon Environmental Research Initiative at Lewis and Clark College (project with Amanda Hulke '09), 2008 - 2010
- Mentor, Preparing Future Faculty program at the University of Minnesota, Spring 2008
- Co-Organizer, Midwest Undergraduate Computational Chemistry Online Conference, 3-5 February 2009 (ten participating schools)
- Co-Organizer, Midwest Undergraduate Computational Chemistry Online Conference, 4-6 March 2008 (five participating schools)
- Co-Organizer, Midwest Undergraduate Computational Chemistry Online Conference, 20-22 February 2007 (five participating schools)
- Co-Organizer, Midwest Undergraduate Computational Chemistry Online Conference, 6-10 February 2006 (five participating schools)
- Panelist, Academic Career Workshop, Chemistry Department, University of Minnesota—Twin Cities, 16-18 January 2004

C. Membership in Professional Societies

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|---|-----------------|
| • American Chemical Society | 1991 to Present |
| • American Geophysical Union | 1993 to Present |
| • Council on Undergraduate Research | 1997 to Present |
| • Founding Member, Midwest Undergraduate Computational Chemistry Consortium | 2003 to Present |

D. Macalester College Research Students

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| 1. Matthew J. Carlson ('10) | Current |
| 2. Cheryl K. Zogg ('11) | Current |
| 3. Matthew R. Hermes ('09) (Senior Honors Project) | 2008 to 2009 |
| 4. Solaire A. Finkenstaedt-Quinn ('10) | 2008 to 2009 |
| 5. Amanda K. Hulke ('09) (Senior Honors Project) | 2006 to 2009 |
| 6. Emily J. Guinn ('08) (Senior Honors Project) | 2007 to 2008 |
| 7. Zachary W. Morrow ('08) | 2006 to 2008 |
| 8. Ilhan Findik ('09) | 2007 |

9. Kara J. Manke ('07)	2006 to 2007
10. Emily Sliz ('08)	2006 to 2007
11. Julia S. Stanfield ('07)	2005 to 2007
12. Brianna J. Kujala ('06) (Senior Honors Project)	2005 to 2006
13. Erin B. Petersen ('05)	2003 to 2005
14. Lukas C. Valin ('05) (Senior Honors Project)	2003 to 2005
15. Peter A. Dillon ('04)	2003 to 2004
16. Amber D. Converse ('04)	2002
17. Kristen L. Templeton ('01) (Senior Honors Project)	2000 to 2001

E. Macalester College Search Committees

• Tenure-Track Position in Environmental Science	2006 to 2007
• Term Position in Inorganic Chemistry	2007
• Tenure-Track Position in Biochemistry	2004 to 2006
• Tenure-Track Position in Environmental History	2004 to 2005
• Term Position in Environmental Science	2004
• Tenure-Track Position in Computational Physics	2001 to 2002
• Tenure-Track Position in Inorganic Chemistry	2000 to 2001
• Science Division Electronics Technician	2000

F. Macalester College: Other Service Experiences

• Faculty Personnel Committee (elected)	2009 to Present
• Chair, Library, Media, Web Services Advisory Group (appointed)	2007 to 2009
• Environmental Studies Coordinating Committee (appointed)	2001 to Present
• Chemistry Department Library Representative (appointed)	2004 to 2008
• Mid-Career Faculty Seminar (selected)	2007 to 2008
• Hughes Bio-Mathematics Course Planning Seminar (appointed)	2001
• Senior Honors Thesis Reader for Kristen Templeton ('01), Leah Appelhans ('02), Gretchen Anderson ('05), Trevor David Rhone ('05), Lukas Valin ('05), Brianna Kujala ('06), Kara Manke ('07), Emily Guinn ('08), Jonas Hiltrop ('08), Matthew Hermes ('09), Amanda Hulke ('09), Benjamin Knurr ('09)	
• Guest Lectures in Physical Chemistry II (14 March 2001, 15 March 2002), General Chemistry I lab (13 November 2001), Environmental Analysis and Problem Solving (15 September 2004), and General Chemistry I (14 and 16 September 2005)	
• <i>Ad hoc</i> committees to evaluate Beltmann Fund proposals (2001, 2009) and Beckman Scholar applications (2005)	