

Brent P. Krueger

Annotated Curriculum Vitae

Hope College, Department of Chemistry
Holland, MI 49423 616 395 7629
kruegerb@hope.edu

ACADEMIC POSITIONS AND AWARDS

- 2014| Professor of Chemistry, Hope College
- 2013| Schaap Research Fellow, Hope College
- 2021 Ruth and John Reed Faculty Achievement Award, Hope College
- 2007| 14 Associate Professor of Chemistry, Hope College
- 2013 Visiting Scholar, University of Florida, Gainesville, FL
- 2007| 08 Senior Research Associate, The Scripps Research Institute, La Jolla, CA
- 2004| 07 Towsley Research Scholar, Hope College
- 2001| 07 Assistant Professor of Chemistry, Hope College

EDUCATION AND TRAINING

- 1999| 01 Postdoctoral Fellow, Department of Pharmaceutical Chemistry,
University of California at San Francisco.
Research Advisor: Professor Peter A. Kollman.
- 1999 Dutch Visiting Research Fellow, Department of Physics and Astronomy,
Vrije Universiteit, Amsterdam, The Netherlands.
Research Advisor: Professor Rienk van Grondelle.
- 1999 Ph.D. in Physical Chemistry, The University of Chicago, Chicago, IL.
Dissertation Title:
Graduate Research Advisor: Professor Graham R. Fleming.
- 1994 M.S. in Physical Chemistry, The University of Chicago.
- 1993 B.S. in Chemistry and Physics,
Truman State University, Kirksville, MO.

RESEARCH SUPPORT

Total funding since 2001 (since tenure review in parenthesis):

33 (24) monetary awards totaling \$ 2,720,807 (\$ 2,213,578).

Sole PI or lead PI on 17 (14) of those awards totaling \$ 1,334,903 (\$ 1,254,283).

Selected awards since 2010:

2020	Michigan Department of Environment, Great Lakes, and Energy.	
	(\$493,605 plus instrumentation valued at \$192,314)	\$ 685,919
2019\22	National Science Foundation.	
		\$ 400,400.
2018\21	Department of Education.	
	Part of a multi-institution grant led by Delmar Larsen totaling \$ 4,949,843.	\$ 161,691.
2015\18	National Science Foundation.	
	Part of a multi-institution grant led by Delmar Larsen totaling \$ 574,992.	\$ 35,741.
2015\17	Hope College-Howard Hughes Medical Institute Course Research Experiences Grant.	\$ 25,000.

- Shorb, and B.P. Krueger. 92, 4168–4178 (2007) DOI: 10.1529/biophysj.106.092650.
10. Structural Fluctuations and Excitation Transfer Between Adenine and 2-Aminopurine in Single-Stranded Deoxytrinucleotides. J.M. Jean and B.P. Krueger. 110, 2899-2909 (2006) DOI: 10.1021/jp054755+.
 11. Energy Transfer in the Nanostar: The Role of Coulombic Coupling and Dynamics. W. Ortiz, B.P. Krueger, V.D. Kleiman, J.L. Krause, and A.E. Roitberg. 109, 11512-11519 (2005). 10.1021/jp050611j.
 12. Photochemical Reaction. G. R. Fleming, B.P. Krueger, and J. W. Longworth. In: <https://www.britannica.com/science/photochemical-reaction>

Articles Based on Postdoctoral Work

13. Energy Transfer in Light-Harvesting Complexes LHCII and CP29 of Spinach Studied with Three-Pulse Echo Peak Shift and Transient Grating. J.M. Salverda, M. Vengris, B.P. Krueger, G.D. Scholes, A.R. Czarnoleski, V. Novoderezhkin, H. van Amerongen, and R. van Grondelle. 84, 450-465 (2003).
14. Energy transfer in the peridinin-chlorophyll-a-protein of *Amphidinium carterae* studied by polarized absorption measurements. S.S. Lampoura, B.P. Krueger, I.H.M. Van Stokkum, J.M. Salverda, C.C. Gradinaru, D. Rutkauskas, R.G. Hiller, R. Van Grondelle. 15, 3849-3852 (2001).
15. Molecular Dynamics Simulations of a Highly-Charged Peptide from an SH3 Domain: A Possible Sequence-Function Relationship. B.P. Krueger and P. A. Kollman. 45, 4-15 (2001)
16. Energy Transfer in the Peridinin Chlorophyll- Protein of Studied by Polarized Transient Absorption and Target Analysis. B.P. Krueger, S.S. Lampoura, I.H.M. van Stokkum, E. Papagiannakis, J.M. Salverda, C.C. Gradinaru, D. Rutkauskas, R.G. Hiller, and R. van Grondelle. 80, 2843-2855 (2001).

Articles Based on Graduate Work

17. Two-Photon Excitation Spectrum of Light-Harvesting Complex II and Fluorescence Upconversion after One- and Two-Photon Excitation of the Carotenoids. P.J. Walla, J. Yom, B.P. Krueger, and G.R. Fleming. 104, 4799-4806 (2000).
18. Ultrafast Energy Transfer in LHC-II Revealed by Three-Pulse Photon Echo Peak Shift Measurements. R. Agarwal, B.P. Krueger, G.D. Scholes, M. Yang, J. Yom, L. Mets, and G.R. Fleming. 104, 2908-2918 (2000).
19. Observation of the S₁ State of Spheroidene in LH2 by Two-Photon Fluorescence Excitation. B.P. Krueger, J. Yom, P.J. Walla, and G.R. Fleming. 310, 57-64 (1999).
20. Carotenoid Mediated B800-B850 Coupling in LH2. B.P. Krueger, G.D. Scholes, I.R. Gould, and G.R. Fleming. 2, 34-40 (1999). DOI: 10.1039/a903172c <http://www.rsc.org/Publishing/Journals/QU/article.asp?doi=a903172c>.

AMBER Advanced Tutorials A1: Setting up an advanced system (including charge derivation). [B.A. Leland](#), [D.A. Paul](#), B.P. Krueger, and R.W. Walker.

- National Meeting, Chicago, IL. 27 March 2007. (talk)
60. "Hybrid molecular dynamics-quantum mechanics simulations of solvation dynamics." American Chemical Society National Meeting, San Diego, CA. 14 March 2005. (talk)
 61. "Molecular Dynamics Studies of a Highly-Charged Peptide: A Possible Sequence-Function Relationship." American Chemical Society National Meeting, Washington D.C. 20-24 August 2000. (poster)
 62. "Transient Absorption Studies of the Peridinin Chlorophyll-a Protein Light-Harvesting Complex." American Chemical Society National Meeting, Washington D.C. 20-24 August 2000. (poster)
 63. "Dynamics Studies of a Stable Heptapeptide." Gordon Conference on Vibrational Spectroscopy. Salve Regina University. 7-10 Aug 2000. (poster)
 64. "Molecular Dynamics Studies of a Stable Heptapeptide." Gordon Conference on Biopolymers. Salve Regina University. 19-22 June 2000. (poster)
 65. "Fluorescence Upconversion and ab initio Studies of the Light-Harvesting Function of Carotenoids in Bacterial Light-Harvesting Antenna." 11th International Conference on Ultrafast Phenomena, Garmisch-Partenkirchen, Germany. 15 July 1998. (poster)

Presentations at National or International Meetings by Students and others (Presenters indicated with *)

66. C. Cooper*, I. DeLoach, A. Slater, R. Wade, S. Brokus, A.A Best, J. McMorris, B.P. Krueger, and M.J. Pikaart, "Interactions between chemical and environmental factors and bacterial community composition in a Great Lakes watershed", Experimental Biology, San Diego, CA, 5 April, 2020. (poster)
67. B. Fry*, D. Wade*, F. Fishman, J.W. Peterson, M.J. Pikaart, E. Schumann, J. Stid, J. Peterson, S. Brokus, R. Wade, A.A Best, and B.P. Krueger, "Heavy Metals in Water: A Global Survey to Characterize Untreated Drinking Sources", Annual Meeting of the Geological Society of America, Phoenix, AZ, 22 September, 2019. (poster)
68. C. Cooper*, C. Belica, A. Pearch, E. Schumann, S. Brokus, F. Moen, R. Wade, A.A Best, B.P. Krueger, and M.J. Pikaart, "Bacterial Community Composition and Environmental Factors in a Hypereutrophic Watershed", A SBMB Annual Meeting, Orlando, FL, 8 April, 2019. (poster)
69. M. Solórzano*, K.C. Franz, M.L. Luke, N.A. Ladd, E.A. Eaton, C.O. Da Silva, S.M. Degan, M.M. Olesh, L.A. Chase, A.P. Putzke, and B.P. Krueger, "Investigating the Role of xCT in Neuroregeneration" Annual Biomedical Research Conference for Minority Students, Indianapolis, IN, 14 November 2018. (poster)
70. R. Wade*, S. Brokus, F. Moen, C. Payne, T. Garcia, C. Harders, A. Jeavons, M. Luke, A. Klein, A. Parshall, L. Perez, E. Plouch, A. Slater, D. Wade, B.P. Krueger, M.J. Pikaart, A.A. Best, "Environmental Factors Affecting Bacterial Community Composition In The Hypereutrophic Macatawa Watershed", Society for Freshwater Science Annual Meeting, Detroit, MI. 22 May 2018 (talk).

71. E. Plouch*, A. Jeavons, M. Luke, A. Parshall, J. Spry, D. Wade, S. Brokus, R. Wade, B.P. Krueger, M.J. Pikaart, A.A. Best, "Monitoring Nutrient Levels And Sediment In Macatawa Watershed", Society for Freshwater Science Annual Meeting, Detroit, MI. 23 May 2018 (poster).
72. M. Solórzano*, N.A. Ladd, K.C. Franz, C.O. Da Silva, L.A. Chase, A.P. Putzke, and B.P. Krueger, "Identifying the Expression Patterns of xCT in Zebrafish to Determine its Role in Neuroregeneration" Annual Biomedical Research Conference for Minority Students, Phoenix, AZ, 3 November 2017. (poster)
73. M. Solórzano*, N.A. Ladd, K.C. Franz, C.O. Da Silva, L.A. Chase, A.P. Putzke, and B.P. Krueger, "Identifying the Expression Patterns of xCT in Zebrafish to Determine its Role in Neuroregeneration" American Society for Biochemistry and Molecular Biology National Meeting, Chicago, IL, 25 April 2017. (poster)
74. D.E. Clark*, J.C. Dood, and B.P. Krueger, "Developing Monovalent Ion Parameters for the Optimal Point Charge (OPC) Water Model." American Society for Biochemistry and Molecular Biology National Meeting, Chicago, IL, 24 April 2017. (poster)
75. N.A. Ladd*, A.P. Putzke, L.A. Chase, and B.P. Krueger, "Interrogating the Role of xCT in Neuroregeneration through Laser Ablation of Zebrafish Neurons" 251st American Chemical Society National Meeting, BIOL Session, San Diego, CA, 15 March 2016 (poster).
76. J.C. Dood*, B.P. Krueger, "Developing monovalent ion parameters for the optimal point charge (OPC) water model", 251st American Chemical Society National Meeting, COMP Session, San Diego, CA, 15 March 2016 (poster).
77. D.L. Blood*, A.M. Rosnik, and B.P. Krueger, "Parameterizing fluorescent protein chromophores for molecular dynamics simulations", 251st American Chemical Society National Meeting, COMP Session, San Diego, CA, 15 March 2016 (poster).
78. N.A. Ladd*, A.P. Putzke, L.A. Chase, and B.P. Krueger, "Interrogating the Role of xCT in Neuroregeneration through Laser Ablation of Zebrafish Neurons" 250th American Chemical Society National Meeting, PHYS Session, Boston, MA, 19 August 2015 (poster). Won best PHYS poster.
79. J.C. Dood*, B.P. Krueger, "Developing monovalent ion parameters for the optimal point charge (OPC) water model" 250th American Chemical Society National Meeting, COMP Session, Boston, MA, 18 August 2015 (poster).
80. J.C. Dood*, B.P. Krueger, "Developing monovalent ion parameters for the optimal point charge (OPC) water model", 250th American Chemical Society National Meeting, SCI-MIX Session, Boston, MA, 17 August 2015 (poster).
81. M.E. Anderson*, B.P. Krueger, A. Schuiling, T. Gugino. "Determining the chemical formula of unknown crystals as a semester-long inquiry theme for general chemistry lab." Biennial Conference on Chemical Education, Grand Valley State University, Allendale, MI, August 2014. (talk)
82. A.C. Cutshall, C.J. Davis*, T.C. Hoffman*, D.W. Summers, and B.P. Krueger. "Single-

- molecule fluorescence spectroscopy using a home-built microscope" , American Chemical Society National Meeting, Dallas, TX. 17 March 2014. (poster)
83. C.J. Kimmel*, and B.P. Krueger*. "Introducing Molecular Modeling to High School Students and Teachers" ChemEd 2011 International Conference, Western Michigan University. 27 July 2011. (talk)
 84. A.A. Cassabaum*, A.S. Ortega*, C.A. Gobrogge, C.J. Calyore, J.D. Lewis, D.A. Paul, A.L. Speelman, C.M. Tobert, and B.P. Krueger. "Investigating Biopolymer Functions and Probe Dynamics By Utilizing Fluorescent Techniques." 241st American Chemical Society National Meeting. Anaheim, CA. 27-31 March 2011. (poster)
 85. A.L. Speelman*, A.S. Ortega, D.A. Paul, B.A. Leland, and B.P. Krueger. "Modeling Fluorescently Tagged DNA and RNA Oligonucleotides for Direct Comparison to FRET Experiments." 54th Biophysical Society Annual Meeting. San Francisco, CA. 23 February 2010. (poster)
 86. A.S. Ortega*, A.L. Speelman, D.A. Paul, B.A. Leland, and B.P. Krueger. "Modeling Fluorescently Tagged DNA and RNA Oligonucleotides for Direct Comparison to Fluorescence-detected Resonance Energy Transfer (FRET) Experiments." 20th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics, Argonne National Laboratory, Argonne, IL. 13 October 2009 (talk)
 87. J.D. Lewis*, D.A. Paul, D.P. Millar, M.J. Pikaart, and B.P. Krueger. "The Study of the Structural Dynamics and Binding of Biopolymers via the Use of Fluorescence-Detected Resonance Energy Transfer (FRET)." Council on Undergraduate Research Posters on the Hill, Washington, D. C. 5 May 2009. (poster)
 88. D.A. Paul*, B.A. Leland, J.D. Lewis, and B.P. Krueger. "Bridging the Gap Between Computation and Experiment to Understand Structural Dynamics in the Hairpin Ribozyme." MERCURY Conference on Undergraduate Computational Chemistry, Hamilton College, Clinton, NY. 4 August 2008. (poster)
 89. J.D. Lewis*, D.A. Paul, D.P. Millar, M.J. Pikaart, and B.P. Krueger. "The Study of the Structural Dynamics and Binding of Biopolymers via the Use of Fluorescence-Detected Resonance Energy Transfer (FRET)." Tenth Annual Beckman Scholars Symposium, Irvine, CA. 25 July 2008. (poster)
 90. J.D. Lewis*, L.R. Hartsell, N.E. Kuiper, C.M. Tobert, M.J. Pikaart, and B.P. Krueger. "The Study of the Structural Dynamics and Binding of Biopolymers via the Use of Fluorescence-Detected Resonance Energy Transfer (FRET)." Biophysical Society National Meeting, Long Beach, CA. 6 February 2008. (poster)
 91. L.R. Harsell*, A.J. Huisman, B.P. Krueger, and M.J. Pikaart. "Thermodynamic exploration of eosin-lysozyme binding: A physical chemistry and biochemistry laboratory experiment." American Chemical Society National Meeting, Chicago, IL. 26 March 2007. (poster)
 92. K.L. Hinkle* and B.P. Krueger. "Analysis of domain flexibility in fluorescently tagged fusion proteins using molecular dynamics simulations." American Chemical Society National Meeting, Atlanta, GA. 27 March 2006. (poster)

- Midwest Undergraduate Computational Chemistry Consortium Conference. Online, 4 February 2020. (poster)
4. M. G. Rabbitoy*, A.J. Bauer*, Aaron A. Best, and B.P. Krueger, "Using Machine Learning to Identify Sources of Bacteria in Water" Thirty-fourth Midwest Undergraduate Computational Chemistry Consortium Conference. Online, 4 February 2020. (poster)
 5. K.L. Breyfogle*, D.L. Blood, A.M. Rosnik, and B.P. Krueger, "Parameterizing Fluorescent Protein Chromophores for Molecular Dynamics Simulations" Thirty-third Midwest Undergraduate Computational Chemistry Consortium Conference. The Ohio State University, 19 July 2019. (poster)
 6. M. G. Rabbitoy*, A.J. Bauer*, Aaron A. Best, and B.P. Krueger, "Using Machine Learning to Identify Sources of Bacteria in Water" Thirty-third Midwest Undergraduate Computational Chemistry Consortium Conference. The Ohio State University, 19 July 2019. (talk)
 7. A.R. Prins*, Z. Snoek*, and B.P. Krueger, "The Next Generation of High Performance Computing Using Containerization" Thirty-third Midwest Undergraduate Computational Chemistry Consortium Conference. The Ohio State University, 19 July 2019. (talk)
 8. K.L. Breyfogle*, D.L. Blood,

25. A.R. Prins*, A.M. Muñoz, A.J. Prins, B.P. Krueger, and J.G. Gillmore. "Computational modeling of the thermodynamics of proposed reactions of N,N-dimethylaniline with BX₃." Twenty-sixth Midwest Undergraduate Computational Chemistry Consortium Conference. Online. 3 February 2016. (poster)
26. J.C. Dood* and B.P. Krueger, "Developing Monovalent Ion Parameters for the Optimal Point Charge (OPC) Water Model." Twenty-sixth Midwest Undergraduate Computational Chemistry Consortium Conference. Online. 3 February 2016. (poster)
27. N.A. Ladd*, A.P. Putzke, L.A. Chase, and B.P. Krueger, "Interrogating the Role of xCT in Neuroregeneration through Laser Ablation of Zebrafish Neurons" Midstates Consortium for Math and Science Undergraduate Research Symposium Biology and Psychology Symposium, Washington University, 6-7 November 2015. (talk)
28. J.C. Dood* and B.P. Krueger, "Developing Ion Parameters for the Optimal Point Charge (OPC) Water Model." Midstates Consortium for Math and Science Undergraduate Research Symposium Physical Sciences, Mathematics, and Computer Science Symposium, University of Chicago, 13-14 November 2015. (talk)
29. D.L. Blood*, A.M. Rosnik, and B.P. Krueger, "Parameterizing Fluorescent Protein Chromophores for Molecular Dynamics Simulations." Midstates Consortium for Math and Science Undergraduate Research Symposium Physical Sciences, Mathematics, and Computer Science Symposium, University of Chicago, 13-14 November 2015. (poster)
30. J.C. Dood* and B.P. Krueger, "Developing Ion Parameters for the Optimal Point Charge (OPC) Water Model." Twenty-Fifth Midwest Undergraduate Computational Chemistry Consortium Conference. Northwestern University, Evanston, IL. 23 Jul

Accelerator Hardware." Twenty-

Summer Symposium. Holland, MI. 30 July 2010. (poster)

56. C.L. Ellis* and B.P. Krueger. "Web What?! Easy 3D Chemistry Tools for High School Students." Michigan Science Teachers Association 57th Annual Conference. Lansing, MI. 4-6 March 2010. (talk)
57. A.L. Speelman*,

and Experiment to Understand Structural Dynamics in the Hairpin Ribozyme." West Michigan Regional Undergraduate Science Research Conference, Van Andel Research Institute. 20 October 2007. (poster)

76. D.A. Paul*, B.A. Leland*, and B.P. Krueger. " Bridging the Gap Between Computation and Experiments to Understand Structural Dynamics in the Hairpin Ribozyme." Ninth Midwest Undergraduate Computational Chemistry Conference, University of Illinois, Champagne-

86. D.B. VanBeek*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Development of a combined molecular dynamics (MD) and fluorescence-detected resonance energy transfer (FRET) method for structural biology." Fifth Midwest Undergraduate Computational Chemistry Conference, Minneapolis, MN. 11-13 July 2005. (talk)
87. C.M. Meeusen*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Molecular Dynamics and Quantum Mechanics Simulations of Solvation Dynamics." Fourth Midwest Undergraduate Computational Chemistry Conference. Online. 7-11 February 2005. (poster)
88. D.B. VanBeek*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Development of a combined molecular dynamics (MD) and fluorescence-detected resonance energy transfer (FRET) method for structural biology." Fourth Midwest Undergraduate Computational Chemistry Conference. Online. 7-11 February 2005. (poster)
89. K.L. Hinkle* and B.P. Krueger. "Analysis of Domain Flexibility in Fluorescently Tagged Fusion Proteins Using Molecular Dynamics Simulations." Fourth Midwest Undergraduate Computational Chemistry Conference. Online. 7-11 February 2005. (poster)
90. C.M. Meeusen*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Molecular Dynamics and Quantum Mechanics Simulations of Solvation Dynamics." Third Midwest Undergraduate Computational Chemistry Conference. Madison WI. 3-4 August 2004. (talk)
91. D.B. VanBeek*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Development of a Combined Molecular Dynamics (MD) and Fluorescence-detected Resonance Energy Transfer (FRET) Method for Structural Biology." Third Midwest Undergraduate Computational Chemistry Conference, Madison WI. 3-4 August 2004. (talk)
92. J.M. Shorb*, B.P. Krueger, and M.E. Silver. "Modeling the Behavior of Siloxane Polymers as Emulsifiers using Molecular Dynamics Simulations." Second Midwest Undergraduate Computational Chemistry Conference. Online. 23-26 February 2004. (poster)
93. M.C. Zwier*, J.M. Shorb*, and B.P. Krueger. "Hybrid Molecular Dynamics-Quantum Mechanics Simulations of Solvation Dynamics." Second Midwest Undergraduate Computational Chemistry Conference. Online. 23-26 February 2004. (poster)
94. J.M. Shorb*, B.P. Krueger, and M.E. Silver. "Modeling the Behavior of Siloxane Polymers as Emulsifiers using Molecular Dynamics Simulations." Western Michigan Regional American Chemical Society Undergraduate Poster Competition, Grand Valley State University. 25 February 2004. (poster)
95. D.B. VanBeek*, M.C. Zwier, J.M. Shorb, and B.P. Krueger. "Development of a combined molecular dynamics (MD) and fluorescence-detected resonance energy transfer (FRET) method for structural biology." Western Michigan Regional American Chemical Society Undergraduate Poster Competition, Grand Valley State University. 25 February 2004. (poster)
96. M.C. Zwier*, J.M. Shorb, and B.P. Krueger. "Hybrid Molecular Dynamics-Quantum

- July 2020, Nov 2020
3. One-two day workshops targeted to a specific campus/region. Oct 2020, Mar 2021

WebMO for High School Teachers

1. One-week residential workshops at Hope College giving high school teachers instruction in quantum chemistry and WebMO and assisting them in developing a complete lesson for their classroom. Summer 2009, 2010, 2011, 2012, 2013, 2015

TEACHING EXPERIENCE

Hope College Courses Taught

2. Chem 111 and 125 General Chemistry I (Dual numbering results from a complete redesign of our GenChem sequence in 2011). Fall 2005, 2006
3. Chem 121 and 126, General Chemistry II. Spring 2006, 2007, 2012, 2014, 2016
4. Chem 113 and 127, General Chemistry Laboratory I. Fall 2002, 2003, 2004, 2009, 2010, 2011, 2013, 2014
5. Chem 114 and 128, General Chemistry Laboratory II. Spring 2002, 2003, 2011, 2012, 2014, 2015
6. Chem 195, Day1: Watershed Laboratory (Research based Chem & Bio Lab). Fall 2016, 2017, 2018, 2020
7. IDS 100, First Year Seminar (acc0E366.60 G 0mlC /P 7G[ceay0 G4(ne:JEWemina)-4(a)-3(borato)]TJE

- Spring 2007, 2009
17. Chem 422, Structure, Dynamics, and Synthesis II (group theory, statistical mechanics, and other advanced topics in PChem). Spring 2002, 2003, 2004, 2006, 2009
 18. Chem 490, Independent Research in Chemistry. Spring and Fall 2001-present
 19. Bio495/Chem495, Journal Club in Structural Biology (cross-listed). Spring 2004, 2006
 20. Chem795/Educ795, Computational Chemistry and Inquiry (cross-listed). Summer 2009, 2010, 2011, 2012, 2013, 2015

Hope College Curriculum Development

1. Co-developed Programming Foundations with Application Modules, which is a suite of Course-based Research Experience modules spanning multiple departments and divisions. See Chem 195/295, Chemical Modeling Laboratory above. 2015–present
2. Refined and added Learning Goals/Skills Mapping to the suite of Day1: Watershed courses, with Dr. Aaron Best and Dr. Catherine Mader. 2016–present
3. Chaired General Chemistry Laboratory curriculum redesign committee, which completely redesigned the GenChem lab sequence, Chem 127 and 128. 2010–2011
And implemented new curriculum by coordinating Chem 127 and 128. 2011–2012
4. Rewrote three lab manuals due to redesign of the Chem 127 and 128 courses and a new Chem 132 course. 2010–2011
5. Chaired In-depth Chemistry Curriculum Committee, which examined possible in-depth courses to fit new ACS guidelines. Spring 2010
6. Member of Biochemistry subgroup of Chem Dept curriculum reform. Fall 2010
7. Developed week-long intensive workshop to teach high school teachers about molecular modeling and inquiry-based instruction, Chem795 and Educ 795. 2008–2009
8. Developed interdisciplinary Methods in Modeling Complex Systems course with Dr. Aaron Best. Spring 2007
9. Gradually redesigned Physical Chemistry I Lecture to include biological examples suitable for students in the Biochemistry and Molecular Biology major. (Extensive redesign contributed by Dr. William Polik in Fall 2007.) 2001–present
10. Developed a new Raman spectroscopy experiment for the Advanced Spectroscopy course. Spring 2004
11. Developed a new experiment for Physical Chemistry I, utilizing fluorescence quenching to measure thermodynamics of binding (with Dr. Michael Pikaart). 2004–2006
12. Developed new computational modeling/VSEPR experiment for the General Chemistry I laboratory course (with Dr. Sheldon Wettack). 2005–2006

University of California at San Francisco Courses Taught

1. Chem 111, Physical Chemistry Laboratory I. Fall 2000
2. Chem 112, Physical Chemistry Laboratory II. Spring 2001

Other Teaching Experience

1. Graduate student member, Teaching Matters Committee, The University of Chicago. 1994–1996
2. General Chemistry Teaching Assistant, The University of Chicago. 1993–1994
Co-initiated and implemented a field trip to Art Institute of Chicago.
3. Organic Chemistry Teaching Assistant, Truman State University. 1991

PROFESSIONAL SERVICE

Reviewer

1. National Science Foundation MRI Spectroscopy/Microscopy review panels. April 2012, May 2014, Mar 2018
2. Member of the National Science Foundation TeraGrid Allocations Committee, quarterly review panel for supercomputer centers. 2008–2011
3. External reviewer for tenure, promotion and/or internal grants, five times. 2008–2013
4. Ad hoc reviewer for funding agencies, including: National Science Foundation, American Chemical Society-Petroleum Research Fund, Research Corporation, Murdock Charitable Trust.
5. Journals including: Proceedings of the National Acd8.02 339.89 Tm0 g0 G 0.012 Tc{5.}]TJETQq0.000

Provides access to cluster hardware and computational chemistry software.
Annual summer research symposia focus on undergraduate student talks and allow students to network with university faculty such as Mark Ratner, Todd Martinez, Nancy Makri, Jim Skinner, Chris Cramer, Laura Gagliardi, Mark Gordon, Benoit Rouix, Charlie Brooks, Greg Voth.
Annual winter online symposia.

2. ACS National Meeting session co-chair and co-organizer, . Salt Lake City, UT. 23 March 2009
3. ACS National Meeting session chair, . Dallas, TX. 18 March 2014

Professional Affiliations

1. American Association for the Advancement of Science.
2. American Chemical Society.
3. American Physical Society.
4. Biophysical Society.
5. American Society for Biochemistry and Molecular Biology
6. Midwest Undergraduate Computational Chemistry Consortium.

HOPE COLLEGE SERVICE

Campus Service

1. Presidential Transition Committee 2018–2019
2. Faculty Compensation Task Force 2018–2020
3. Global Partnerships Task Group for Internationalization of the Curriculum 2017
4. Animal Care and Use Committee 2015–2019
5. Board of Trustees, Faculty Representative 2014–2018
6. Committee on Campus Climate 2014–2015, 2017–18
7. Academic Affairs Board 2010–2012

One of three primary campus governance boards.

Chair 2011–12. Many major items were acted upon including:

Complete redesign of the Global Learning component of the General Education curriculum.

Restructuring of Social Science component of the General Education Program.

Extensive discussion

Secretary 2010-11.

8. Member of divisional Diversity Task Force. Spring 2011, 2011-12
9. Member, Financial Response Team. Chosen by Provost to determine ways to reduce cost and improve quality of the academic program. Fall 2010
10. Director of the Computational Science and Modeling Laboratory. 2005–present

12. Academic advisor for 10-20 students each year. 2001–present

Outreach

1. Co-advisor 3rd Coast Cubing Club 2017–2019
2. Co-organized visit of high school students to Day1:Watershed course. 2017–present
Hamilton High School.
3. Molecular Modeling Workshop for high school teachers. 2009–2013
Developer, Administrator, and Lead Instructor.
One-week workshop brings 8–12 high school teachers to campus each summer.
Teachers develop lessons using molecular modeling and inquiry-based methods.
Since inception, 52 teachers have taught lessons to more than 5,000 students who
have executed more than 50,000 quantum calculations. Many of these teachers
continue to use these lessons each year.
Assessment results demonstrate an increased desire to attend college (39%) and to
pursue careers in science (29%) and computing (25%).
4. Guest speaker in elementary classrooms.
5. Speaker for Hope Science Day program.

COMMUNITY SERVICE

- | | |
|-------------------------|-----------|
| Grace Episcopal Church | |
| Stewardship | 2013–2018 |
| Budget preparation team | 2013–2018 |
| Senior Warden | 2015 |
| Vestry member | 2013–2015 |