

Curriculum Vita

Kimberley A. Frederick

Personal Information

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Education

BA:	Lawrence University, Appleton, WI	1991
Ph.D.	Purdue University, W. Lafayette, IN	1996
	Advisor: Dr. Dor Ben-Amotz	

Professional Experience

Professor, Skidmore College	2012-present
Fulbright, Senior Scholar, University of Tasmania, Australia	Spring 2018
Department Chair, Chemistry, Skidmore College	2013-2016
Associate Professor, Skidmore College	2009-2012
Associate Professor, College of the Holy Cross	2003-2009
Visiting Scientist, Rensselaer Polytechnic Institute	Fall 2005
Visiting Scientist, National Institute of Standards and Technology	Spring 2006
Associate Professor, Whittier College	2003
Assistant Professor, Whittier College	1999-2003
NSF-ROA Fellow, University of Tennessee	1999, 2000
Assistant Professor, Maryville College	1996-1999

Leadership in Professional Organizations

Chair and Coelect, Chemistry Division, CUR	2015-present
Program Review Committee Chair, CUR	2014-2017
Education Chair, Analytical Division, ACS	2013-present
Workshop Facilitator and Coordinator "Beginning a Research Program in the Natural Sciences at a Predominantly Undergraduate Institution"	2008-present
Panelist, National Science Foundation, Chemical Measurement and Instrumentation and Division of Undergraduate Education	2006-present
Organizer and Chair, Symposium on Scale Separations	2011
Editor, Journal of Chemical Education, CUR Association column	2010-2011
Workshop Facilitator "Institutionalizing Undergraduate Research"	September 2008
Council on Undergraduate Research Councilor	2006-present
Membership Chair, ACS Analytical Division	2006-2008
Program Chair, Education Section, Federation of Analytical Chemistry and Spectroscopy Societies, Providence RI	October 2002
ACS Experiential Programs in Chemistry (EpiC) Program Expert	

K.A. Frederick Funding Continued

3. Ambos, E.A. et al (9/16/20) "Integrating and Scaffolding Research into Undergraduate STEM Curricula: Probing Faculty, Student, Disciplinary, and Institutional Pathways to Transformational Change", Consultant NSFSE (DUE1625354)
4. Frederick, K.A. (9/15/16), "Implementation of the Peer-Led Team Learning Supplemental Instruction Model in Foundational Chemistry in order to Improve Student Success and STEM retention, Consortium on High Achievement and Success, \$6000
5. Frederick, K.A. (11/06/13) "MRI-R2: From Molecules to Ecosystems: Establishment of the Skidmore Analytical Interdisciplinary Laboratory (SAIL)" PI; NSF-MRI (DBI 0959476), \$547,755
6. Frederick, K.A. (1/10/14) "Development and Implementation of an Inquiry-Based, Laboratory-Driven, General Chemistry Sequence, NSF-CLI (DUE 0941951), \$198,224
7. Frederick, K.A. (10/06/10/11) "Studies of flow processes in microfluidic systems involving polyelectrolyte multilayers, thermoresponsive polymers and guanosine gels" Henry Dreyfus Teacher-Scholar Award, \$60,000
8. Frederick, K.A. (7/04/09) "Time Dependent Electroosmotic Flow Studies in Coated Capillaries", NSF-FRUI (CHE-0400964), \$120,000
9. Frederick, K.A. and A. Kotze (Summer '07) Connecticut Business Industrial Association-Pfizer Fellowship \$5000
10. Frederick, K.A. (06/03/07) "Characterization of Electroosmotic Flow in Fused Silica Capillaries and Electrostatically Self-Assembled Polyelectrolyte Multilayers", Research Corporation (CG6060) \$38,841
11. Frederick, K.A. (1/06/06) "NSF-NIST Collaboration: Deposition and Characterization of Flow in PEM Coated Microfluidic Devices", NSF (CHE-0601238) \$19,550
12. Frederick, K.A. and K.Y. Noonan (Summer '05) Connecticut Business Industrial Association-Pfizer Fellowship \$5000
13. Stoub, D and K.F. Schrum (8/02-7/03) "Integration of High Field, Multinuclear NMR Spectrometry into the Undergraduate Science Curricula at Whittier College and Two Local Community Colleges" Department of Defense Infrastructure Support Program for HBCU/MI, \$262,153.
14. Swift, C, Schum, K, Warrick, J, and Stoub, D.G., (3/02/05) "Investigation of Environmental Impacts of River Reaches on Water Pollution and Bioremediation", Merck AAAS, \$60,000.
15. Schrum, K.F. (8/01/02) "Incorporation of Gas Chromatography-Mass Spectrometry into the Undergraduate Curriculum", Department of Defense Infrastructure Support Program for HBCU/MI, \$90,437
16. Schrum, K.F. (3/03/01), "Acquisition of a Flame Atomic Absorption Spectrophotometer", Pittsburgh Conference National College Grants Program, \$9,000
17. Schrum, K.F., (5/978/98) "Evaluation of Synchronous Luminescence and Raman Spectroscopy to Study Polycyclic Aromatic Hydrocarbons as Environmental Contaminants", Appalachian College Association Student/Faculty Grant Recipient, \$15,000

Publications (formerly published under K.F. Schrum)

1. Narum, J. K.A. Frederick and M.A. Palladino, "21st Century Spaces for 21st Century Learners: Where We Are, How We Got Here, and What Next", *Scholarship and Practice of Undergraduate Research*, accepted September 2017.
2. Ferro, A., E. Carbone, J. Zhang, E. Marzouk, M. Villegas, A. Siegel, D. Nguyen, Possidente, J. Hartman, K. Polley, M. Ingram, G. Berry, T.H. Reynolds, B. Possidente, K. Frederick, S. Ives and S. Lagalwa, "Succinic acid treatment mitigates cerebellar mitochondrial OXPHOS dysfunction, neurodegeneration and motor learning deficits in a Purkinje-specific spinocerebellar ataxia type 1 (SCA1) mouse model", *PLoS One*, 2017, under review
3. Ferro, A, E. Carbone, E. Marzouk, A. Siegel, K. Frederick, S. Ives and S. Lagalwa, "Treating SCA1 Mice with Water Soluble Compounds to Non-specifically Boost Mitochondrial Function", *J. Visualized Experiments*, 2016,
4. O'Connor, E., A. Siegel, S. Markiewicz, T. Wenzel and K.A. Frederick, "Using Derivatized Cyclodextrins for Chiral Capillary Electrophoretic Separations", manuscript in preparation.
5. K.A. Frederick, "Assessing the Impact of Learning First Discovery General Chemistry on Student Learning and Attitudes about Science", manuscript in preparation.
6. S. Wang, D. Remillard, R. Ahern and K.A. Frederick, "Fluorometric Determination of D Lactate in Human Urine", manuscript in preparation.
7. K.A. Frederick, "Using Forensic Science to Teach Method Development in the Undergraduate Analytical Lab", *Anal Bioanal Chem* 2013, 405, 5623–5626.
8. K.A. Frederick, "The Joys and Pitfalls of Collaboration in the Research Process", in *How to Get Started in Research*, ed. M. Schuh, Coun-4 (F)2 (r(n H)2 (um)--12 (ont)-2 44jn)-12 (c)aFh du in H

Presentations

1. A. Ismail, L. Swenson, T. Henao, and K.A. Frederick "Detection of Hydrofracturing Water Infiltration in Surface Waters", Pittcon, Chicago, IL, March 2017
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K.A. Frederick/ Presentations Continued

17. K.A. Frederick, C. Sood and Christenson , "Development and Implementation of an Inquiry-Based, Laboratory-Driven, General Chemistry Sequence Transforming Undergraduate Education in STEM, PI's Conference, January, 2013
- 18.

K.A. Frederick/ Presentations Continued

47. H. Thorpe and K.F. Schrum, "Bioaccumulation of Heavy Metals by Plants in the San

