

Robert John Hamers
 Department of Chemistry
 University of Wisconsin-Madison
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Post-graduate Experience

University of Wisconsin-Madison

Steenbock Professor of Physical Science	2014-present
Wisconsin Distinguished Professor	2014-present
Chemistry Department Chair	2007-2010
Chemistry Department Associate Chair	2006-2007
Arthur Adamson Professor of Chemistry	2008-2013
Irving Shain Chair	2004-2009
Evan P. Helfaer Chair	1996-2001
Professor of Chemistry	1994-present
Associate Professor	1990-1994

Silatronix, Inc.

Co-founder and Chief Science Officer	2007-2021
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University of Oxford

Visiting Scholar, Department of Materials	2000-2001
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IBM Corporation T. J. Watson Research Center, Yorktown Heights, NY

Research Staff Member, "Nanophysics" group, Physical Sciences Division	1986-1990
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Education and Training

Visiting Scientist (Postdoc)

IBM T.J. Watson Research Center, Yorktown Heights, NY	1985-1986
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Ph.D., Chemistry

1986

Cornell University, Ithaca, NY

Major Field: Physical Chemistry; Minor Fields: Applied Physics, Theoretical Chemistry

Thesis: State-to-state energy transfers in molecule-surface collisions: NO/Ir(111)

Advisors: Paul L. Houston and Robert P. Merrill

B.S., Chemistry with Honors and Distinction, Chemistry Course

1980

University of Wisconsin-Madison, Madison, WI

Selected Honors and Awards

Plenary Lecture, Midwest Regional ACS Meeting	2022
Plenary Lecture, ACS Great Lakes Regional Meeting	2021
Fellow of the American Chemical Society	2016
Langmuir Lecturer Award, American Chemical Society	2016
Giddings Lecturer, University of Utah,	2015
Steenbock Professor of Physical Science, UW-Madison	2014-present
Wisconsin Distinguished Professor, UW-System	2007-present
Frontiers in Chemical Research Distinguished Lecturer Series, Texas A&M University,	2013
Class of 1960 Fellow, Williams College	2012
American Chemical Society National Award in Colloid and Surface Chemistry	2012
H.H. King Lecturer, Kansas State University	2010
Medard Welch Award, AVS Science and Technology Society	2009

International Nanostructures, Surfaces and Interfaces Prize, 12 th International Conference on Formation of Semiconductor Interfaces, Weimar, Germany	2009
Wisconsin Alumni Research Foundation Named, Arthur Adamson Professor	2008-2013
Fellow of the American Association for the Advancement of Science, AAAS	2004
American Chemical Society, Arthur Adamson Award for Distinguished Service in the Advancement of Surface Chemistry,	2005
Irving Shain Chair, University of Wisconsin-Madison Dept. of Chemistry	2004-2008
Recognition as "Highly-Cited Researcher", principal field of Materials Science, Institute for Scientific Information, Web of Science	2005
IBM Faculty Award	2002, 2003
NSF "Special Creativity" Awards	2000-2002, 2002-2004
John Simon Guggenheim Memorial Foundation Fellowship	2000-2001
Kellett Mid-Career Award, University of Wisconsin-Madison	2000
S.C. Johnson Co. Distinguished Fellow	2000-2003
Vilas Associates Award	1998
Evan P. Helfaer Chair in Chemistry, University of Wisconsin-Madison	1996-2001
Innovation Recognition Program, Union Carbide Corporation	1996, 1997
Fellow of the American Vacuum Society, now AVS Science and Technology Society	1994
Peter Mark Memorial Award, American Vacuum Society Outstanding Scientist or Engineer under 35 years of age	1993
National Science Foundation Presidential Faculty Fellowship	1992-1997
Camille and Henry Dreyfus New Faculty Award	1990-1995
IBM Research Division Award for STM Studies of Surface Reactions on Semiconductors	1989
IBM Corporation Outstanding Innovation Award for Scientific Accomplishments with Scanning Tunneling Spectroscopy	1987
Wentink Outstanding Graduate Student Award, Cornell University Dept. of Chemistry	1985
National Science Foundation Graduate Fellowship	1980-1983
Phi Beta Kappa	1978

Professional Affiliations

American Association for the Advancement of Science (AAAS), Fellow
 American Chemical Society, Fellow
 American Vacuum Society (AVS), Fellow
 Materials Research Society
 Phi Beta Kappa
 National Organization for the Professional Advancement of Black Chemists and Chemical Engineers (NOBCCHE)
 PROFS, Public Representation Organization of the Faculty Senate
 Wisconsin Alumni Association, Lifetime Member

Selected Professional and National Service

Director, NSF Center for Sustainable Nanotechnology, multi-institutional grant centered at UW-Madison, Phase I 2012-2015 and Phase II, 2015-2025 2012-present
 American Chemical Society National Awards Selection Committee 2022-present
 Senior Editor, Accounts of Chemical Research, American Chemical Society 2015-present
 NSF Review Panel, Future of Semiconductors (FuSe) Teaming Grants 2022
 External Review Team, Washington State University Dept. of Chemistry (cancelled/COVID) 2020
 External Advisory Board, NSF Center for Biomedical, Environmental and Sustainability Applications (CREST), University of Puerto Rico 2019-present
 Site visit team, NSF Center for Next-Generation Water Treatment (NEWT),

Rice Univ. Houston TX,	2019
Academic Leader/Trainer, ACS-Cottrell Scholars Academic Leadership Training Workshop Washington, DC	2017, 2018
Site Review Team, University of Pennsylvania, NSF Science & Technology Center on Engineering Mechanobiology	2017
Co-chair, NSF Workshop on Midscale Instrumentation for the Chemical Sciences	2016
DOE-BES Committee of Visitors, Energy Frontier Research Centers and Energy Hubs	2016
Member, External Review Committee, Indiana University Dept. of Chemistry	2017
Pacific Northwest National Laboratory Science Theme Advisory Panel	2017
NSF Review Panel, Carbon Materials	2017, 2019
External Advisory Board, University of Minnesota MRSEC	2017-present
EAGLE School Board of Directors, school for talented and gifted children	2015-2019
Editorial Advisory Board, Accounts of Chemical Research, Amer. Chemical Society	2014-2015
Editorial Advisory Board, Environmental Science: Nano, Royal Society of Chemistry	2013-2016
American Chemical Society, Chair of the Colloid and Surface Chemistry Division, 3-year elected sequence of Chair-elect, Chair, Past Chair	2013-2015
National Awards Selection Committee Member, American Chemical Society	2012-2014
Member, American Chemical Society Graduate Profile Advisory Board	2013
Member, External Review Committee, University of Iowa Department. of Chemistry	2012
National Nanotechnology Infrastructure Network review and reverse site visit,	2013
ARPA-E RANGE Program Review Panel	July 2013
American Chemical Society, co-organizer, symposium on Nanomaterials and the Environment, Spring 2012 National Meeting	March 2012
NSF Workshop on Nanomaterials and the Environment, Co-chair	2011
Chair, U.S. Naval Research Laboratory External Review Committee for Chemistry/Materials	2005, 2008, 2011
Member, State of Wisconsin Legislative Council Special Committee on Nanotechnology	2011
International Organizing Committee, International Conference on Diamond and Carbon Materials	2007-present
Science Foundation Ireland, Proposal Reviewer	2012
Austrian Science Foundation, FWF Proposal Reviewer	2012
Dept. of Energy, Energy Frontier Research Centers Review Team	2012
Dept. of Energy, Early CAREER Reviewer	2011-2013
National Science Foundation Centers for Chemical Innovation Site Visit Irvine, CA	2011
National Science Foundation SBIR Phase I Review Panel	2010, 2011
National Science Foundation Science and Technology Center Review Panel	2011
National Science Foundation CAREER Review Panel	2009, 2010
National Science Foundation MRSEC Review Panel	2008
Co-chair, NSF Workshop on "Materials Education"	2007-2008
National Program Committee Co-chair, Materials Research Society (member of 4-person primary organizing committee for Spring 2008 National Meeting	2008
Visiting Committee Member, Cornell Center for Materials Research	2007
National Science Foundation External Review Panel, Penn State University MRSEC	2006
National Science Foundation Review Panel, Chemical Bonding Centers	2005
National Science Foundation Review Panel, Small Business Innovative Research, SBIR	2005
National Research Council of Canada, Peer Review Site Visit Team, Steacie Institute for Molecular Sciences, Ottawa, Canada	2004
Chair, 65th Annual Physical Electronics Conference, Madison, WI	2005
National Nanotechnology Initiative Research Directions II Workshop, National Academy of Sciences, Washington, DC, Discussion leader and lead report-writer on "Energy and the Environment"	2004
Symposium Organizer, Materials Research Society National Spring Meeting,	

"Biological –Inorganic Hybrid Materials"	2004
Invited Lecturer/Instructor, ACS-PRF Summer School on Physical Chemistry on the Nanometer Scale, Washington State University	2003
National Science Foundation Review Panel, SBIRs and Nanotechnology	2003
National Science Foundation Site Review Team, Ohio State University Environmental Molecular Sciences Institute, Columbus, OH	2003
American Vacuum Society, Trustees of the Scholarships and Awards Committee,	2001-2004
Editorial Advisory Board, "Surface Science", Elsevier Press	2001-2007
Editorial Advisory Board, "Surface Science Reports, Elsevier	2006- 2009
Program Chair, 10th NSF Workshop on Materials Chemistry, Tempe, AZ	2003
External Advisory Board, NSF Environmental Molecular Sciences Institute on Oxidative Catalysis, Northwestern University	
Organizing Committee, 9th NSF Workshop on Materials Chemistry, Newark, DE	2002
Chair, Local Arrangements, 8 th NSF Workshop on Materials Chemistry, Madison, WI	2001
American Vacuum Society Nanometer Science and Technology Division, National Program Committee Chair	1999
Enrico Fermi International School of Physics, Varenna, Italy, Invited Lecturer	2000
American Vacuum Society Nanometer Science and Technology Division Vice-chair, 1997 and Chair, 1998	1997-1998
NSF Site Visit Committee for Environmental Molecular Sciences Institutes: Columbia University, Princeton University, Northwestern University	1999
International Review Committee, Osaka University "Center of Excellence", Japan	1998
Defense Science Study Group, Institute for Defense Analyses/DARPA,	1996-1997
American Physical Society, Co-Organizer, 2 sessions, 1996 March Meeting	1996
8th International Conference on Scanning Tunneling Microscopy Program Committee Chairman, Snowmass, CO	1995
American Vacuum Society: National Program Committee Member	1994
American Vacuum Society: Executive Board Member, Nanometer Science and Technology Division	1992
American Physical Society: co-organizer Atomistic Processes of Epitaxial Growth on Si	
NSF Review Panel for Materials Synthesis and Processing Initiative	1994
NSF Review Panel for Chemistry Instrumentation Grant Program	1997
Materials Research Society, developed and taught first short course on "Scanned Probe Microscopies"	1987-1989

Selected University Leadership, Service, and Administration

Chair, Search & Screen Committee, UW-Madison Provost and Vice Chancellor for Academic Affairs	2022-2023
Chair, WIPAC (Wisconsin IceCube Particle Astrophysics Center) internal review, (graduate school review committee)	2020
Congressional briefings, US Senate and House of Representatives, Washington DC	2017
Member, Provost's <i>Ad Hoc</i> Committee on Family Leave for UW Employees	2016-2019
Chair, UW-Madison Commission on Faculty Salary and Economic Benefits	2013-2016
Public Access to Research Working Group, VCRGE	2016-2017
Search and Screen Committee, Vice Provost for Faculty and Staff	2014
Search and Screen Committee, Dean of the College of Letters and Science	2013
Co-founder, Associate Director and member of the Executive Committee, UW-Madison Nanoscale Science and Engineering Center, NSEC	2004-2014
Research Experience for Undergraduates (REU) Site on Chemistry of Materials for Renewable Energy (Joint Chem/CBE Program, co-PI with Andrew Greenberg)	2013-present
Working Group on Undergraduate Research, Vice Provost for Teaching & Learning	2012-2014
Materials Science Program Reorganization Committee Member	2013-2014

Institutional Nominations and Internal Competitions, INIC, Graduate School	2014-2015
Executive Committee, Materials Research Science and Engineering Center	2005-2013
Search committee, Johnson Controls Endowed Chaired Professor in Energy Storage	2011
College of Letters and Science Honors Program Advisory Committee	2007-2010
Internal Selection Committee, NSF Nanoscale Interdisciplinary Research Teams Grants	2005
University Committee on Conflict of Interest	2003-2005
Workshop on Leadership Development. CoE Teaching Improvement Program	2005, 2006
Selection Committee, Packard Award Nominees	2002
Chair, Grad School Ad Hoc Strategic Plan Committee, Materials Science Program	1998-1999
Workshop for junior faculty on "Mentoring Graduate Students", Physical Science Rep.	1999
Ad Hoc Review Committee for Dept. Of Geology and Geophysics	1997
Ad Hoc Committee on Office of Sponsored Programs Mission and Visions	1997
Campus Committee on Microscopy and Image Analysis	1994-1998
Graduate School Research Committee	1992-1995
Materials Science Program Advisory Committee	1990-2000

Chemistry Department Service (Partial List)

Department Leadership Council	2022-present
ACS/UW-Madison Bridge to the Chemistry Doctorate Program, PI and Faculty lead	2019-present
Analytical Path Chair	2020-present
Graduate Program Committee	2020-present
Climate and Diversity Committee	2015-2020
Materials Chemistry Ph.D. Program Founder (2002) and Chair	2002-2007, 2011-2012
Ad Hoc Committee on Ethics (Investigation of ethics violation)	2015
CHOPS, Chemistry Opportunities Participant	2012-present
Finance/Rooms Committee	1997-1999, 2004-2006, 2011-2015
Department Chair Search & Screen Committee	1998, 2001, 2004, 2013, 2014
Chemistry Department Chair	2007-2010
Chemistry Department Associate Chair	2006-2007
Post-tenure Review Committee,	2006-2007, 2015-2019
Fundraising/Development Committee	2006-2008, 2011-2013
Analytical Sciences Division Chair	1997-1999, 2004-2006, 2011-2012
Department Web Committee	1996-1998, 2004-2007 (chair), 2010-2020
Chair, Faculty Search Committee	2001-2002, 2002-2003, 2003-2004
Chair, Materials Chemistry Graduate Recruiting	2002-2006
Chair, Chemistry Department Shops Committee	1991-1997
Chemistry Department Undergraduate Curriculum Committee	1993-1997
Chemistry Department Computing Committee	1991-2003, 2008-2020

Selected K-12 and Public Outreach Activities:

"Moon over Monona Terrace", public astronomy/science outreach event	2022
Public lecture, "Solar Imaging", Madison Astronomical Society	2021
https://www.youtube.com/watch?v=Rj2UzyhjvRE	
Madison Metropolitan School District Science Outreach Program, Zoom presentations with live video feed of astronomical imaging of moon and planets (2x)	2020
Public "Badger Talk", UW-Parkside,	March, 2020
Public demonstrations on nanotechnology, Minnesota Museum of Science	2019
Public talk, "Badger Talk", Kimberly-Little Chute Public Library, Oct. 17	2019
Nanovation podcast (1 hour interview) http://www.fillerlab.com/nanovation/archive/43	2019
Television interview regarding Bridge to the Doctorate	2019
Blog site for Center for Sustainable Nanotechnology http://sustainable-nano.com	

and Spanish language http://nano-sostenible.com , public communication tools	2012-present
Nelson Institute “Earth Day” speaker, Monona Terrace Convention Center	2018
Founders’ Day Speaker, UW-Alumni Association of Racine/Kenosha	2017
Founders’ Day Speaker, UW-Alumni Association of Cincinnati, OH	2016
Larry Meiller Show, Wisconsin Public Radio, 30-minute live interview	2016
Founders’ Day Speaker, UW-Madison	2015
Intel Science Talent Search: Mentored Memorial High School student, national semifinalist 2013	2010-2013
Siemens Math, Science, and Technology Competition: Mentored Madison Memorial High School student	2010-2012
Wisconsin State Legislature: Testified at Informational Hearing of the Wisconsin State Assembly Committee on Public Health on “Applications and Environmental Impact of Nanoscale Materials”	2009
PEOPLE, Pre-College Enrichment Opportunity Program for Learning Excellence Program: Workshop on Scanning Electron Microscopy	2004-present
Engineering EXPO: participated in EXPO displays	2009, 2011, 2013
Wisconsin Rural Leadership Program: Presentation and laboratory	2011
EAGLE School Science Olympiad Team state mentor, state competition	2011
EAGLE School Science Mentor Program: Mentoring of 8 th grade students working on ~8-week science projects; 1-2 students each year (most years)	2002-present
Madison Metropolitan School District: Summer Science Intern Program: Mentoring of high school students summer research programs	2003-present
Edgewood High School Science Mentor Program: Mentored high school student conducting full-time research at UW	2006
Radio interview on “Nanotechnology and Energy”, broadcast on WORT	2008
Television Program: “In Wisconsin” on Nanotechnology, ~7-minute segment, broadcast 3 times across Wisconsin	2006
Radio Program: Live 30-minute interview on “Nanotechnology”, WORT	2006
Citizens’ Consensus Conference on Nanotechnology, expert panelist	2005
Reporters’ Workshop on Nanotechnology. Presentation and hands-on activities	2005
Legislators’ Workshop on Nanotechnology. Presentation and hands-on activities	2006
Conversations in Science: Program for high school and middle school teachers televised and re-broadcast	2005
Women of Science Day. Workshop and tours	2005
Radio Project: Worked with Badger Ridge middle school students to construct >100 functioning AM radios	2002-2003
Nano Cafe on Nanotechnology and the Environment, speaker	2007
“The Atom”, part of the “World of Chemistry” television series hosted by Nobel prize winner Roald Hoffman	1986

Presentations, 1990-present (invited unless otherwise indicated)

2023

September	International Conference on Diamond and Carbon Materials, Mallorca Spain (contributed)
August	National meeting of the American Chemical Society, San Francisco, CA
June	Gordon Research Conference on Environmental Nanotechnology (Discussion leader)
June	New Diamond and Nano-Carbon (NDNC) International Conference, Michigan (contributed)
March	National Meeting of the American Chemical Society, Indianapolis, IN, panel on Research at HBCUs

2022

October	ACS Midwest Regional Meeting (Plenary talk)
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Robert Hamers, March Sept.17, 2020

July Telluride Workshop on Semiconductor Surface Chemistry
 June New Diamond and Nano-Carbon (NDNC) International Conference (Kanazawa, Japan)

2021

June New Diamond and Nano-Carbon (NDNC) International Conference
 June Great Lakes Regional ACS Meeting (Plenary)
 May Adamas Nanotechnologies Diamond Seminar
 April Materials Research Society National Meeting

2020

December Pacificchem (International Chemical Congress of Pacific Basin Societies) (postponed)
 October DOD Workshop on Diamond (virtual)
 April National Meeting of the Materials Research Society, San Francisco (cancelled)
 March National Meeting of the American Chemical Society, Philadelphia (done virtually)
 March Badger Talk, University of Wisconsin-Parkside
 February University of Rochester, Rochester, NY

2019

December Kavli "Sensing the Future" Symposium, Rice University
 November DIACAT (Diamond Catalysis) International Symposium, Wurzburg, Germany
 November Chemistry Colloquium, Purdue University
 October Badger Talk (UW Public presentation), Kimberly, WI
 September Seoul National University, Seoul, Korea
 September International Conference on Diamond and Carbon Materials, Seville, Spain (2 contributed)
 March American Chemical Society, Entrepreneur's Workshop (panelist, in-person and live-streamed)
 March American Chemical Society National Meeting, Orlando FL
 January University of Puerto Rico – Rio Piedras
 January University of Puerto Rico – Cayey

2018

November Hasselt University Materials Seminar, Hasselt, Belgium
 November NanoSafe Conference, Grenoble, France, plenary talk
 September 29th International Conference on Diamond and Carbon Materials, Dubrovnik, Croatia
 August American Chemical Society National Meeting, Boston, MA
 July Telluride Conference on Chemical Reactions at Surfaces, Telluride, CO
 May European Materials Research Society, Strasbourg, France
 April American Chemical Society National Meeting, New Orleans, LA
 April Madison Earth Day Symposium, Madison, WI
 March OneChemistry Symposium, Johns Hopkins University, Baltimore, MD
 February University of Puerto Rico Rio-Piedras, San Juan, PR
 February University of Puerto Rico – Cayey, Cayey, PR

2017

October University of Illinois Materials Chemistry Seminar
 September European Materials Research Society, E-MRS, Warsaw, Poland, 2 invited talks
 June European Center for Computational Chemistry, CECAM Workshop
 April American Chemical Society National Meeting, San Francisco, CA, 2 talks
 March Pittcon, (Pittsburg Conference on Analytical Chemistry), Chicago, IL
 February Columbia University, MRSEC seminar.
 February University of Texas- Austin Center for Electrochemistry, Austin, TX

2016

December University of Maryland – Baltimore County
November AVS National Meeting, Nashville, TN
August Langmuir Lecturer Award Address, ACS National Meeting, Philadelphia, PA
June 8th International Nanotoxicology Congress
June ACS Colloids and Surface Science Symposium
May Air Force Molecular Dynamics Program, Invited Speaker, Washington DC
May New Diamond Nano-Carbon, NDNC, Xi'an, China (cancelled, medical emergency)
April Founder's Day Lecturer, Wisconsin Alumni Club of Cincinnati, OH
March ACS National Meeting, San Diego, CA

2015

December Brown University, EPA Superfund Talk, Providence, RI
November Tufts University Chemistry Department Seminar, Boston
November Sustainable Nanotechnology Organization, Keynote speaker, Portland, OR
September University of Utah, Giddings Lecturer, 2 talks, Salt Lake City, UT
June Nanostructures: Theory Meets Experiment, London, England
June Gordon Research Conference on Environmental Nanotechnology, Stowe, VT
February Gordon Research Conference on Energy Materials, discussion leader, Ventura, CA

2014

December Materials Research Society National Meeting, Boston, MA
October Ronald T. Pflaum Colloquium Lecture, University of Iowa
July Faraday Discussions, Royal Society of London, Sheffield, UK
May University of Minnesota Women's Faculty Retreat on Leadership, Keynote speaker
May 8th International New Diamond and Nano-Carbon Conference, Chicago, IL
March Pittsburgh Conference on Analytical Chemistry, Chicago, IL
March American Chemical Society National Meeting, Dallas, TX
March Materials Research Society National Meeting, San Francisco, CA
February Dow Chemical Company, Interfacial Sciences Group
February 19th Hasselt Diamond Workshop, Hasselt, Belgium
February University of Florida Chemistry Department Seminar

2013

November 17th International Conference on Atomically Controlled Surfaces Interfaces and Nanostructures, Tsukuba, Japan, 2 invited talks
October British Petroleum International Surface Science Workshop, 2 invited talks, Naperville, IL
September Sci-X National Meeting, Milwaukee, WI
September National Meeting of the American Chemical Society, Indianapolis
September Georgia Tech, Chemistry Dept. Colloquium
September University of North Carolina-Chapel Hill Seminar
May 7th International Conference on New Diamond and Nano-Carbon, Singapore
April Gordon Conference on Chemical Reactions at Surfaces, Switzerland Discussion Leader
March National Meeting of the American Chemical Society
February Univ. of Iowa Chemistry Colloquium
February Frontiers in Chemistry Distinguished Lecturer, series of 3 lectures, Texas A&M University

2012

November National Meeting of the AVS Science and Technology Society, Tampa, FL
October University of Minnesota 8th Annual Nano Workshop
October University of Michigan Materials Chemistry Seminar
October Class of 1960 Lecture, Williams College

September University of Delaware Inorganic Chemistry Seminar
 March National Meeting of the American Chemical Society, San Diego, CA
 (Colloid and Surface Chemistry Award Address)
 March National Meeting of the American Chemical Society, San Diego, CA, Barb Karn Symposium
 March International Workshop on Nanostructures and Nanoelectronics, Tohoku University, Sendai,
 Japan, presented by R. Ruther due to timing conflict

2011

October Regional Meeting of the American Chemical Society, St. Louis, MO
 October Michigan State University, Chemistry Departmental Colloquium
 April National Meeting of the Materials Research Society, San Francisco, CA
 May Evonik/Degussa Corporation, Dresden, Germany
 April Center for Computational Materials Science, University of Bremen, Germany
 April University of Wageningen, The Netherlands, Chemistry Seminar
 April University of Delft, Netherlands, Chemistry Seminar

2010

December National Meeting of the Materials Research Society, Boston, MA
 October UW-Eau Claire Chemistry Dept. Seminar
 September Kansas State University, H.H. King Lecture
 July Telluride Conference on Semiconductor Surface Chemistry, Telluride, CO
 May Joint Sino-German Workshop on Chemical and Biological Sensing, Suzhou, China
 May 4th International Conference on New Diamond and Nano-Carbon, NDNC-2010, Suzhou, China
 March National Meeting of the American Chemical Society, San Francisco, CA
 March 3M Corporation, Minneapolis, MN
 March 27th International Battery Seminar and Exhibit, Ft. Lauderdale, FL
 January 37th Conf. on the Physics and Chemistry of Surfaces and Interfaces, PCSI-37, Santa Fe, NM

2009

November National Conference of the Materials Research Society, Boston, MA
 October National Conference of the AVS Science and Technology Society
 July 12th Intl. Conference on the Formation of Semiconductor Interfaces, Weimar, Germany
 (plenary talk)
 June 3rd International Conf. on New Diamond and Nano-Carbon, NDNC-2007, Traverse City, MI
 April University of Illinois Urbana-Champaign
 April Northwestern University
 March 26th International Battery Seminar and Exhibit, Ft. Lauderdale, FL
 February Gordon Research Conference on Chemical Reactions at Surfaces, Ventura, CA

2008

December 8th International Workshop on Electrochemical Double-Layer Capacitors and Related
 Technologies, Deerfield Beach Florida
 November 5th International Symposium on Surface Science and Nanotechnology, ISSS-5, Sendai, Japan
 May 2nd International Conf. on New Diamond and Nano Carbon, NDNC-2008, Taipei, Taiwan
 May Center for Nanoscale Materials, Argonne National Labs
 April National Meeting of the American Chemical Society, New Orleans, LA
 March University of California – San Diego
 February Notre Dame University
 January Korean Electric Power Research Institute, KEPRI, Daejeon, South Korea
 January Chemistry Dept. Colloquium, University of Virginia, Charlottesville, VA.

2007

November	9 th International Conference on Atomically Controlled Surface and Interfaces, ACSI-9, Japan
June	International Conference on Nanoscience and Nanotechnology for Biological / Biomedical/ Sensing, Hong Kong, plenary talk
June	Oak Ridge National Laboratory
May	Argonne National Laboratory Center for Nanoscale Materials
April	Oak Ridge National Laboratory Center for Nanoscale Materials
April	National Meeting of the American Chemical Society
March	National Meeting of the Materials Research Society, San Francisco, CA
February	Notre Dame University
January	Gordon Conference on Electrochemistry, Ventura, CA
January	Howard University, Washington, DC

2006

December	National Meeting of the Materials Research Society, Boston, MA
October	Tenth International Symposium on Nanoscience at Surfaces, Tokyo, Japan
October	Department Colloquium, University of Minnesota
September	Argonne National Laboratory Workshop on In-Situ Characterization of Surface and Interface Structures and Processes
September	17 th European Conference on Diamond, Estoril, Portugal, Plenary speaker
July	Telluride Workshop on Semiconductor Surface Chemistry, Telluride, CO
July	International Workshop on Nanoscale Analysis, Zurich, Switzerland, Keynote lecturer
May	International Conference on Diamond Science and Technology, North Carolina
May	Argonne National Laboratory Center for Nanoscale Materials
April	Department Colloquium, Columbia University
March	International Symposium on Bio-electronics, Tohoku University, Sendai, Japan.
March	National Meeting of the American Chemical Society, Atlanta, GA
January	International Workshop on Nano-Crystal / Nano-Particle Diamond, Tokyo, Japan.

2005

December	Pacificchem 2005, Honolulu, Hawaii
November	National Meeting of the Materials Research Society, Boston, MA
July	Gordon Conference on Dynamics at Surfaces, MA
October	Department Colloquium, University of Minnesota
September	Argonne National Laboratory Workshop on In-Situ Characterization of Surface and Interface Structures and Processes
May	NATO Advanced Research Workshop on Nanocomposite Materials, Santorini, Greece
May	Argonne National Laboratory Center for Nanoscale Materials
April	Department Colloquium, Columbia University
March	National Meeting of the American Chemical Society Adamson Award Address, Anaheim, CA
March	National Meeting of the Materials Research Society, San Francisco, CA
March	Symposium on Surfaces & Interfaces in Nano Bioelectronics, Okazaki Japan, Plenary
February	Nanotechnology Symposium, Walter Schottky Institute, Munich, Germany, Plenary speaker
February	Pittsburgh Conference on Analytical Chemistry, "Pittcon", Orlando, FL

2004

November	Inter-Pacific Workshop on Nanoscience and Nanotechnology, Hong Kong
October	FACSS, Federation of Analytical Chemistry and Spectroscopy Societies, Portland, OR
September	Plenary Speaker, 15 th European Conference on Diamond, Riva Del Garda, Italy
July	Beckman Scholars Symposium, Irvine, CA
June	Plenary Speaker, Northwest/Rocky Mountain Regional ACS Meeting, Salt Lake City
March	National Meeting of the American Chemical Society, 2 invited talks, Anaheim, CA.
November	Department Colloquium, University of Chicago

October	Smiths Detection, Inc., seminar on biological detection technologies
July	UC-Irvine Physical Chemistry Seminar
June	DuPont Corp, "Discovery" Seminar, Wilmington, DE
May	University of California-Santa Barbara
May	Rutgers University Physical Chemistry Seminar
April	Cornell University, "Frontiers of Physical Chemistry" colloquium
February	Center for Fundamental Materials Research, Michigan State University
January	Purdue University Analytical Chemistry Seminar
January	Center for Nanoscale Science and Technology, University of Illinois Urbana-Champaign

2003

November	National Meeting of the American Vacuum Society
October	Regional Meeting of the ACS, Pittsburgh PA
October	Harvard University Physical Chemistry Seminar
September	Purdue University Physical Chemistry Seminar
September	University of Illinois Champaign-Urbana, Materials Science Seminar
July	Argonne National labs Workshop on Nanoscience
July	NSF/PRF Summer School on "Physical Chemistry at the Nanoscale", 3 lectures Pullman, WA
May	Plenary Speaker, NSF/EPA Grand Challenge Workshop on Nanotechnology and the Environment, Arlington, VA
May	8th International Symposium on Diamond Materials, Paris, France
April	Argonne National Labs
March	National, "March" Meeting of the American Physical Society, Austin, TX, (Cancelled)
February	Gordon Research Conference on Chemical Reactions at Surfaces, Ventura, CA
February	IBM-Yorktown Heights Physical Sciences Seminar
February	Sensir Technologies, Inc.

2002

Dec.	National Meeting of the Materials Research Society, Boston, MA
October	Regional Meeting of the American Vacuum Society and Electrochemical Society, Chicago, IL
October	50 th Midwest Solid-State Conference, Urbana, IL
August	Telluride Workshop on Chemistry at Silicon Surfaces, presented by M. Schwartz
July	American Association for Crystal Growth, AACG, Lake Tahoe, CA.
March	National Meeting of the American Chemical Society, Orlando, FL
January	PCSI-29, Physics and Chemistry of Semiconductor Interfaces, Santa Fe, NM
October	Ohio State University Analytical/Physical Seminar
May	University of California – San Diego, Physical Chemistry Seminar
March	Johns Hopkins University, Physical/Analytical Chemistry Seminar
January	Pacific Northwest Laboratories, Hanford, WA
January	Washington State University, WA., Physical chemistry seminar

2001

October	Chips to Hits Conference, San Diego, California
June	Gordon Conference on Analytical Chemistry, Rhode Island
May	UCLA Chemistry Dept. Seminar
May	Grinnell College Chemistry Dept. Colloquium
May	IBM-Yorktown Heights Physical Sciences Seminar
April	Peking University Chemistry Department Seminar, Beijing, China.
April	Chinese Academy of Sciences Seminar, Beijing, China
April	University Institute of Physical Chemistry Seminar, Beijing, China
Feb.	Oxford University "Nanoscale Materials" seminar, Dept. of Materials

2000

December Pacificchem 2000 Honolulu, Hawaii
October University of Michigan, Physical/Analytical Seminar
October Michigan State University, Chemistry Departmental Colloquium
October Univ. of Missouri Chemistry Dept. Colloquium
June-July Enrico Fermi International School of Physics, "Nanostructures", invited lecturer
March National Meeting of the American Physical Society, Minneapolis, MN
March National Meeting of the American Chemical Society
February University of Oregon physical chemistry seminar, Eugene, OR
January Utah State University, physics colloquium, Logan, UT
January University of Utah physical chemistry seminar, Salt Lake City, Utah

1999

December 3rd International Symposium on Surface Science for Nanodevice Fabrication, Tokyo, Japan
November Stanford University physical chemistry seminar
November National Meeting of the Materials Research Society, Boston, MA
September 9th International Conference on Precision Science and Technology for Perfect Surfaces, Japan
Society for Precision Engineering, Osaka, Japan
September Dartmouth University physics dept. colloquium
July U.S. Naval Research Laboratories, Washington, DC
July Gordon Research Conference on Electronic Materials, Henniker, NH
March Gordon Research Conference on Chemical Reactions at Surfaces, Ventura, CA

1998

December 6th International Congress on Scanning Tunneling Microscopy, Tokyo, Japan
December National Meeting of the Materials Research Society, MRS, Boston, MA
December University of Tokyo Chemistry Dept. Seminar, Tokyo, Japan
October Iowa State University Dept. of Chemistry
August National Meeting of the American Chemical Society, Boston, MA
July Telluride Workshop on "Chemistry at Silicon Surfaces"
May Indiana University Dept. of Physics Seminar
March 6th International Symposium on Surfaces and Thin Films, Taipei, Taiwan
February Vanderbilt University Departmental Chemistry Seminar
February University of Pennsylvania Physical Chemistry Seminar
January Symposium on Scanning Tunneling Microscopy, Osaka University, Japan, plenary talk

1997

December Harvard University Physical Chemistry Seminar
September 17th European Conference on Surface Science, ECOSS17, Twente, The Netherlands,
Plenary talk
September IUVSTA, International Union of Vacuum Science and Technology Associations Workshop
on Surface Chemistry at the Nanoscopic Scale, Ost Polgeest, The Netherlands
July First International Symposium on Scanning Tunneling Spectroscopy, Poznan, Poland
June Union Carbide Corp, Charleston, W.V. Innovation Recognition Seminar
June Goldschmidt Conference on Geochemistry, Tucson, AZ
May Scanning Microscopy International, Chicago, IL
April University of Minnesota Physical Chemistry Seminar
March, International Conference on Microscopy of Semiconductor Materials, Oxford, England
March Princeton University Physical Chemistry Seminar
March Northwestern University Physical/Analytical Seminar
March University of Pittsburgh Physical Chemistry Seminar
February University of Colorado-Boulder Physical Chemistry Seminar

1996

- May American Vacuum Society, Regional Mtg., Milwaukee, WI
March National Meeting of the American Chemical Society, New Orleans, LA
January International Symposium on Structure and Dynamics at Surfaces, Weizmann Institute of Science, Rehovot, Israel.
January Hebrew University, Jerusalem, Israel

1995

- December International Symposium on Scanning Tunneling Microscopy, Kanazawa Institute of Technology, Kanazawa, Japan
December Atom Technology Symposium, JRCAT Atom Technology Program, Tsukuba Science Center, Tsukuba, Japan
October National Meeting of the American Vacuum Society, New Orleans, LA
October FACSS, Federation of Analytical Chemistry and Spectroscopy Societies, St. Louis, MO. (Presented by student, S. Higgins)
September Columbia University, Chemistry Departmental Seminar
August International Workshop on Semiconductor Interfaces, Germany.
May Joint US-Japan Binational Workshop on Atomic Scale Mechanisms of Epitaxial Growth, Honolulu, Hawaii.
April National Meeting of the American Chemical Society, Anaheim, CA
January Gordon Research Conference on Chemical Reactions at Surfaces, Ventura, CA

1994

- November National Meeting of the American Institute of Chem. Engineers, AIChE, San Francisco.
August National Meeting of the American Chemical Society, Washington, DC
April Wisconsin Undergraduate Research Symposium, Ripon, WI, plenary talk
March March National Meeting of the American Physical Society, Pittsburgh, PA
March National Meeting of the American Chemical Society, San Diego, CA
January International Society for Optical Engineering, Los Angeles, CA
April College of Wooster, Wooster, Ohio Chemistry Department Seminar
March Wisconsin Undergraduate Research Symposium, plenary talk, Ripon, WI
January Northwestern University Physical/Analytical Seminar

1993

- November American Vacuum Society National Meeting, Orlando, FL
October Optical Society of America/9th Interdisciplinary Laser Science Conference, Toronto, Canada
October Ohio State University, Chemistry Department Colloquium
August Microscopy Society of America National Meeting, Seattle, WA
April University of Wisconsin-Stevens Point, Chemistry Department Seminar
March Gordon Research Conference on "Frontiers of STM", Ventura, California
January Ohio State University, Nanometer Materials Colloquium

1992

- November University of Illinois, Materials Science Colloquium, Urbana, IL,
September Oak Ridge National Laboratory, Chemistry Colloquium, Oak Ridge, Tennessee,
July Gordon Research Conference on Physical Electrochemistry, New Hampshire
June First International Workshop on Photons and Scanned-Probe Microscopies, Konstanz,
Germany
June NSF Workshop on Atomic Resolution Microscopy, MD
May Scanning Microscopy International Conference, Chicago, IL
April University of Wisconsin-Eau Claire, Chemistry Department Seminar

April	National Meeting of the American Chemical Society, San Francisco
March	March National Meeting of the American Physical Society, Indianapolis, IN
March	U.S. Naval Research Laboratory, Chemistry Colloquium, Washington DC

1991

August	Experimental Program to Stimulate Competitive Research, EPSCOR, plenary lecture.
August	4th Chemical Congress of North America/ National ACS Meeting, New York, NY, 2 talks
October	University of Chicago, James Franck Institute Lecture
August	University of Houston, Physics-Astronomy Seminar
July	West Virginia University, Chemistry/Physics Departmental Seminar
June	National Institute for Standards and Technology, NIST, Interface Science Seminar, Washington, DC
April	Northwestern University Materials Science and Engineering Colloquium
February	Regional Meeting, American Vacuum Society, Minneapolis, MN

1990

December	American Chemical Society Regional Meeting, New Orleans, LA
December	University of Wisconsin-Milwaukee, Physics Department Colloquium
November	State University of New York at Stony Brook, Physics Colloquium
November	Materials Research Society National Meeting, Boston, MA
November	American Vacuum Society Regional Meeting, Minneapolis, MN
October	American Vacuum Society Regional Meeting, Batavia, IL
August	12th International Congress for Electron Microscopy, Seattle, WA
July	4th International Conference on Scanning Tunneling Microscopy, late discovery, Baltimore, MD

Research Supervision: Current Research Group

Current Staff

Michael Schwartz (Managing Director, Center for Sustainable Nanotechnology 2016-present

Current Postdoctoral Research Associates

Cesar Ledon Ortiz	2019-present
Nathaniel Rieders	2021-present

Current Graduate Students (Ph.D. unless otherwise indicated)

Cesar Saucedo	2018-present
Katie Kryzdzinski	2018-present
Louis Morris	2018-present
Alicia Tripp	2018-present
Connor Protter	2019-present
Anand Ode	2019-present

Research Supervision: Students and Postdocs Completing Training

Postdoctoral Research Associates Completing Training

21. Ben Bachman	2022-2023
20. Jenny Hedlund Orbeck	2018-2019
Current position: Northwestern University	
19. Zhifei Li	2018-2019
Current position: National Renewable Energy Laboratory, Golden, CO	

18. **Chenyu Wang**, Ph.D. 2014, Binghamton University 2017-2019
Current position: Research Associate, Sandia National Laboratories
17. **Arun Pandiakumar**, Ph.D. 2016, Indian Institute of Science 2017-2018
16. **Juan Tuberquia**, Ph.D. 2011, Vanderbilt University 2010-2012
Current position: Staff Scientist, Dow Chemical, Freeport TX
15. **Jixin Chen**, Ph.D. 2010, Texas A&M 2010-2012
Current position: Assistant Professor, Ohio University
14. **Lee Bishop**, Ph.D. 2010, UC-Berkeley 2011-2012
Current position: Lawrence Hall of Science, Berkeley, CA
13. **Monica Usrey**, Ph.D. 2008, Univ. of Illinois 2007-2009
Current Position: R&D Program Manager, Silatronix, Inc., Madison, WI
12. **Lingzhi Zhang**, co-advised with Bob West 2008
Current Position: Assistant Professor, China.
11. **Kevin Metz**, Ph.D. 2007, Chemistry, University of Wisconsin-Madison 2007-2009
Current Position: Professor, Albion College, Albion, MI
10. **Paula Colavita**, Ph.D. 2005, Univ. of South Carolina 2005-2007
Current Position: Lecturer, Trinity College, Dublin, Ireland
9. **Joseph Beck**, Ph.D. 2003, University of Wisconsin 2003-2005
Current position: Protein Mods, Inc.
8. **Masanori Shinohara**, Ph.D. Nagasaki University 2004
Current position: Assistant Professor, Electrical Engineering, Nagasaki University
7. **Matt Marcus**, Ph.D. 2004, Physics, Univ. of Wisconsin-Madison 2004-2006
Current position: Honeywell Research, Minneapolis, MN
6. **Chang Soo Lee**, Ph.D. 2003, Kyushu University, Japan 2003-2005
Current Position: Research, Samsung Corporation, Korea.
5. **Zhang, “Jenny” Lin**, Ph.D. Peking University 2001-2002
4. **Mark Ellison**, Ph.D. Stanford, 1997, R.N. Zare. 1997-1999
Current Position: Professor, Ursinus University
3. **Phil Bond**, Ph.D. 1998 Co-advised with Jillian Banfield, Dept. of Geology 1998-2000
Current Position: Professor, Dept. of Microbiology, Univ. of East Anglia, UK
2. **Michael Bronikowski**, Ph.D. Stanford 1992 1992-1994
Current Positions: Research Staff, Lawrence Berkeley Labs
1. **Gad Haase**, Ph.D. Hebrew University, 1991 1991-1993
Current Position: Sandia National Laboratories

Students Completing Ph.D. Degree, with RJH as principal thesis advisor

65. Cesar Saucedo, Ph.D. 2023, Inorganic Chemistry

Ph.D. Thesis: Characterization of the sub-bandgap photoelectron emission mechanism of diamond into vacuum and water

Current position: Phi/Ulvac Surface Analysis

64. Curtis Green, Ph.D. 2022, Materials Chemistry

Ph.D. Thesis: Material and Medium Composition Influence on Nanomaterial Transformations in the Environment

Current position: Millipore Sigma Corp., Madison, WI

63. Paige Kinsley, Ph.D. 2022, Materials Chemistry

Ph.D. Thesis: Carbon Coatings as a Tool for Controlling Surface Chemistry of Materials

Current position: Staff member, Argonne National Laboratory

62. Benjamin Bachman, Ph.D. 2022, Materials Chemistry

Ph.D. Thesis: Electrochemical and Thermal Chemistry of Carbon Species

Current position: Postdoc, UW-Madison

61. Zachary Zones, Ph.D. 2021, Materials Chemistry

Ph.D. Thesis: Optical Characterization of Fluorescent Diamond Nanoparticles in Complex Environments

Current position: Postdoc, Lawrence Berkeley Laboratory

60. Jaya Borgatta, Ph.D. 2021, Materials Chemistry

Ph.D. Thesis: Understanding the Influence of Cu-based Nanoparticle Properties on Interactions with Plant Systems and Disease Suppression

Current position: Corteva Biosciences

59. Austin Henke, Ph.D. 2021, Analytical Chemistry

Ph.D. thesis: Chemical Transformations of Lithium Cobalt Oxide Nanoparticles in Model Environmental Systems

Current position: Postdoc with Paul Westerhoff, Arizona State University

58. Liz Laudadio Ph.D. 2020, Materials Chemistry

Ph.D. Thesis: in Situ Analysis of Ligand Interactions with Metal Oxide Nanoparticles

Current Position: Argonne National Laboratory

57. Kelly (Yongqian) Zhang, Ph.D. 2020, Materials Chemistry

Ph.D. Thesis: Influence of Structure and Morphology of Nanoparticle Ligands on Biological Interactions

Current Position: Research Staff, Merck and Co, NJ

56. Sarah Guillot, Ph.D., 2019, Materials Chemistry

Ph.D. Thesis: Thermal and Electrochemical Decomposition Mechanisms of Organosilicon Electrolytes

Current Position: Staff Scientist, Silatronix, Inc., Madison, WI

55. Shuo Li, Ph.D., 2019, Materials Chemistry

Ph.D. Thesis: Plasmonic diamond materials

Current Position: Postdoc, Stanford University

54. Jason Bandy, Ph.D., Materials Science and Engineering

Ph.D. Thesis: Photoemission from Diamond Thin Films for Extreme Photoelectrochemistry

Current Position: Engineer, Plasma Materials Inc., Phoenix AZ

53. Melinda Shearer, Ph.D. 2018, Materials Chemistry

Ph.D. Thesis: Correlating Spatial Heterogeneity with Optical Properties of Transition Metal Dichalcogenides

Current Position: Research Staff, PPG Industries, Pittsburgh, PA

52. Arielle Mensch, Ph.D. 2017, Materials Chemistry

Ph.D. Thesis: Characterizing Nanoparticle Interactions at the Cellular Membrane

Current Position: Postdoc, Pacific Northwest National Laboratory

51. Mimi Hang, Ph.D. 2017, Materials Chemistry

Ph.D. Thesis: Investigating and Controlling Technologically Relevant Complex Metal Oxide Nanomaterials to Mitigate Environmental Impact

Current Position: Intel Corp., Portland OR

50. Laura Slaymaker, Ph.D. 2017, Analytical Chemistry

Ph.D. Thesis, "Characterization and Modulation of Electrochemical Processes at the Cathode-Electrolyte Interface in Lithium-Ion Batteries

Current Position: Lecturer, Colorado Mesa University

49. Margaret Robinson, Ph.D. 2017, Analytical Chemistry

Ph.D. Thesis: "Background-free Imaging of Nanoparticles in Complex Environments"

Current Position: Thermo-Fisher Corp., Verona, WI

48. Shuyu Fang, Ph.D. 2016, Physical Chemistry

Ph.D. Thesis: Characterization and Modulation of Electrochemical Processes at the Cathode-Electrolyte Interface in Lithium-Ion Batteries

Current Position: PPG Corporation, Pittsburgh, PA

47. Jamie Wheeler, Ph.D. 2015, Materials Chemistry

Ph.D. Thesis: Understanding the environmental chemistry and biological impacts of nanomaterials

Current position: Researcher, 3M Corporation, Minneapolis, MN

46. Marco Torelli, Ph.D. 2015, Chemical Biology

Ph.D. Thesis: Studying the Interface between Nanomaterials and Biomolecules

Current position: Postdoc, Adamas Nanotechnologies

45. Linghong Zhang, Ph.D. 2015, Materials Chemistry

Ph.D. Thesis: Photo and Electrochemical Reduction of CO₂ at Diamond Surfaces

Current position: Postdoc, Argonne National Laboratory

44. Di Zhu, Ph.D. 2014, Materials Chemistry

Ph.D. Thesis: Diamond as a Solvated Electron Source for Nitrogen Reduction

Current Position: Power Environmental Energy Research Institute, PIRRE

43. Rebecca Putans, Ph.D. 2014, Materials Chemistry

Ph.D. Thesis: Functionalization of Nanomaterial Surfaces for Light-harvesting and Nanotoxicology Applications

Current Position: Researcher, 3M Corporate Research Labs, Minneapolis, MN

42. Caroline English, Ph.D. 2014, Materials Chemistry

Ph.D. Thesis: New Approaches to Organic-Inorganic Interfaces for Solar Energy Applications

Current Position: Senior Process Engineer, Intel Corp.

41. Yizheng Tan, Ph.D. 2013, Materials Chemistry

Ph.D. Thesis: Optical and Electronic Studies of Photostability and Charge Dynamics

Current Position: Adjunct Professor, Santa Clara University

40. Michelle Cooperrider Benson, Ph.D. 2013, Materials Chemistry

Ph.D. Thesis: Synthesis of Stable Interfaces on SnO₂ Surfaces for Charge-Transfer Applications

Current Position: Research Integrity Specialist, Columbia University

39. Joseph Yeager, Ph.D. 2013, Physical Chemistry

Ph.D. Thesis Surface Chemistry of Silicon Anodes for Next-Generation Lithium-Ion Batteries

Current Position: Laboratory Instructor, Smith College

38. Kacie Louis, Ph.D. 2012, Physical Chemistry

Ph.D. Thesis: Surface Functionalization of Titanium Dioxide Nanoparticles: Photo-Stability and

Reactive Oxygen Species, ROS Generation
Current Position: Research Scientist, Akzo Nobel Co., Brewster, NY

37. Xin Chen, Ph.D. 2011, Physical Chemistry

Ph.D. Thesis: Chemistry at the Organosilicon-based Electrolyte/electrode Interface in Lithium-ion Batteries

Current Position, Research Scientist, Saudi Arabian Basic Industries Corporation, SABIC, Exton, PA

36. Rose Ruther, Ph.D. 2012, Materials Chemistry

Ph.D. Thesis: Molecular Interfaces to Electronic Materials

Current Position: Oak Ridge National Laboratory

35. Ryan Franking, Ph.D. 2011, Materials Science Program

Ph.D. Thesis: Development of the Titanium Dioxide-Organic Interface and Mechanistic Studies of Photochemical Grafting on Titanium Dioxide

Current Position: 3M Corporate Research Labs, Minneapolis, MN

34. Stephanie Hogendoorn, Ph.D. 2011, Physical Chemistry

Ph.D. Thesis: Functionalization and Electrocatalysis on Carbon Nanofibers

Current Position, Research Chemist, Akzo Nobel Co., Brewster, NY

33. Xiaoyu Wang, Ph.D. 2010, Materials Chemistry

Ph.D. Thesis: Mechanistic Study of Photochemical Functionalization on Group IV Semiconductors

Current Position: Research Scientist, Akzo Nobel Co., Brewster, NY

32. Elizabeth Landis, Ph.D. 2010, Materials Chemistry

Ph.D. Thesis: Molecular Monolayers for Attaching Electroactive Molecules to Vertically Aligned Carbon Nanofibers

Current Position: Associate Professor, Holy Cross College, Worcester, MA

31. Divya Goel, Ph.D. 2009, Materials Chemistry

Ph.D. Thesis: Growth and Assembly of Functionalized Nanomaterials: Using Organic-Inorganic Polymer Hybrid Systems

Current Position: Intel Corp., Dallas, TX

30. Andrew Mangham, Ph.D. 2009, Materials Chemistry

Ph.D. Thesis: Ligand Effects on Semiconductor Nanoparticles in Two Contexts: Self-assembly and Environmental Stability

Current Position: National Weather Service, Chanhassen, MN

29. Bo Li, Ph.D. 2009, Analytical Chemistry

Ph.D. Thesis: Nanowire-Based Chemical / Biological Sensor Fuses

Current Position: 3M Corporation, Singapore.

28. Jeremy Streifer, Ph.D. 2008, Physical Chemistry

Ph.D. Thesis: Photochemical Functionalization of Hydrogen Terminated Silicon Surfaces with Functional Organic Alkenes

Current Position: Intel Corporation, OR

27. Heesuk Kim, Ph.D. 2008, Materials Chemistry

Ph.D. Thesis: Chemical Grafting of Molecular and Biomolecular Layers to Compound Semiconductor Surfaces

Current Position: Korean Institute for Science and Technology, KIST, Seoul, Korea

26. Bin Sun, Ph.D. 2007, Materials Chemistry

Ph.D. Thesis: Integration of Carbon-based Materials with Microelectronic and

Electromechanical Devices for Biosensing Applications
Current Position: Intellectual Property Associate, Foley & Lardner, Washington, DC

25. Lu Shang Ph.D. 2007, Analytical Chemistry

Ph.D. Thesis: Assemble Nanowires into Novel Biosensor Configurations Using Dielectrophoresis

Current Position: Vice President, Guangxi Architecture Design and Research Institute.

24. Kiu-Yuen Tse, Ph.D. 2007, Materials Chemistry

Ph.D. Thesis: Electrical Properties of Nano-Structured Carbons in Aqueous and Non-Aqueous Electrolytes

Current Position: Senior Research Chemist, 3M Corporate Research Labs, Minneapolis, MN

23. Kevin Metz, Ph.D. 2007, Materials Chemistry

Ph.D. Thesis: Synthesis and Applications of Hybrid Nanowires

Current Position: Associate Professor, Albion College, Albion, MI

22. Sarah Baker, Ph.D. 2006, Materials Chemistry

Ph.D. Thesis: Synthesis and Functionalization of Carbon Nanotubes and Nanofibers

Current Position: Staff Scientist, Lawrence Berkeley Labs, CA

21. Beth Nichols, Ph.D. 2006, Analytical Chemistry

Ph.D. Thesis: Photochemical Functionalization of Diamond Surfaces

Current Position: Dow Chemical, Midland, MI

20. Tami Lasseter Clare, Ph.D. 2005, Materials Chemistry

Ph.D. Thesis: Functional Monolayers for Direct Electrical Biosensing

Current Position: Associate Professor, Portland State University, Portland OR

19. Kevin Weidkamp, Ph.D. 2005, Physical Chemistry

Ph.D. Thesis: Surface Chemistry of Pentacene on Clean and Chemically Modified Silicon(001) Surfaces

Current Position: Epic Computer Systems, Madison, WI

18. Wensha Yang, Ph.D. 2005, Materials Chemistry

Ph.D. Thesis: Biologically Modified Diamond Thin Film for Biosensing Applications

Current Position: Research Scientist, Cedars-Sinai Medical Center, Los Angeles, CA

17. Liang Fang, Ph.D. 2003, Materials Chemistry

Ph.D. Thesis: Attachment of Pi-conjugated Molecules on Si(001) Surfaces and Application in Molecular and Organic Electronics

Current Position: Arkema Chemical, King of Prussia, PA

16. Wei Cai, Ph.D. 2003, Analytical Chemistry

Ph.D. Thesis: Chemical and Biochemical Modification of Silicon Surfaces

Current Position: General Electric Corporate Research and Development Center, Schenectady, NY

15. Michael Schwartz, Ph.D. 2003, Materials Chemistry

Ph.D. Thesis: The Role of Dimer Structure in Controlling Organic Reactions on Group IV Surfaces

Current Position: Staff Scientist, University of Wisconsin-Madison.

14. Christina Hacker, 2003, Analytical Chemistry

Ph.D. Thesis: Optical and Electronic Characterization of Organic Monolayers on Silicon(001)

Current Position: Research Staff, National Institute for Standards and Technology, NIST.

13. Bo Hu, Ph.D. 2002, Analytical Chemistry

Ph.D. Thesis: Chemical and Structural Study at the Interface between Metal Sulfides and Acids

Current Position: General Electric Research and Development, Shanghai, China

12. Xiaoping Cao, Ph.D. 2002, Analytical Chemistry

Ph.D. Thesis: Intefacial Structure and Bonding of Nitrogen-Containing Molecules with Silicon Surfaces
Current Position: Pharmacia Upjohn Research Center

11. Sarah Coulter, Ph.D. 2001, Analytical Chemistry

Ph.D. Thesis: Reactions of Substituted Aromatic Molecules on the Silicon(001 Surface
Current Position: Research, Clorox Corp.

10. Molly McGuire, Ph.D. 2001, Analytical Chemistry

Ph.D. Thesis: Elemental Sulfur on Oxidized Sulfide Mineral Surfaces
Current position: Professor, Bucknell University

9. Jennifer Hovis, Ph.D. 1999, Physical Chemistry

Ph.D. Thesis: Cycloaddition Chemistry on 2x1 Reconstructed Surfaces
Current position: 496 Analytics

8. Joel Olson, Ph.D. 1999, Analytical Chemistry, jointly supervised with Art Ellis

Ph.D. Thesis: Microscopic Studies of the, 110 Cleaved Surface of CdSe Using a Scanning Tunneling Microscope

Current position: Associate Professor, Florida Institute of Technology

7. Hongbing Liu, Ph.D. 1998, Analytical Chemistry

Ph.D. Thesis: Surface Chemistry of Unsaturated Organic Molecules on Si(001 Surfaces
Current Position: Elf Atochem Corporation, King of Prussia, PA

6. Jun Shan, Ph.D. 1997, Physical Chemistry

Ph.D. Thesis: A Surface Infrared Spectroscopy Study of Reaction Chemistry during Silicon Chemical Vapor Deposition Processes

Current Position: Research Staff, Informix/IBM Corporation

5. Ernest Frank, Ph.D. 1997, Analytical Chemistry

Ph.D. Thesis: Nanoscale Surface Restructuring of Silver Thin Films by Scanning Tunneling Microscopy
Current Position: Group Leader, Heterogenous Catalysis, Dow Chemical, Freeport TX

4. Xiangxiong Chen, PhD. 1996, Analytical Chemistry

Ph.D. Thesis: Direct Imaging of Small Molecules via Cryogenic Scanning Tunneling Microscopy
Current Position: Applications Development, ThermoFisher Scientific

3. Yajun Wang, 1996, Analytical Chemistry

Ph.D. Thesis: Atomic Scale Surface Structural and Chemical Characterization using Scanning Tunneling Microscopy: Application to Silicon Chemical Vapor Deposition and Doping Processes

Current Position: Manager, AT&T Lucent Technologies, Chicago, IL

2. Steven Higgins, Ph.D. 1996, Analytical Chemistry

Ph.D. Thesis: Microscopic Investigations of the Chemical and Electrochemical Reactions at the Galena, Lead Sulfide/Water Interface

Current Position: Professor, Wright State University

1. Marc McEllistrem, Ph.D. 1993, Analytical Chemistry

Ph.D. Thesis: Tip-Related Current and Electric Field Effects in Scanning Tunneling Microscopy
Current position: Professor of Chemistry, UW-Eau Claire

Students Completing Terminal M.S. Degree

Kirsten Louthan	2018
Tim Saunders	2018
Kayla Lloyd	2018
Catherine Alvarez	2017

Miao Yang	2016
Elvin Morales	2014
Courtney Stavis	2012
Xueying He	2012
Michael McCoy (posthumous)	2010
Patrick Warf	2008
Jermal Chandler	2006
Amanda Hennip	2004
Arianne Baker	2004
Jason Otis	2003
Shenqi Xie	2001
Rebecca Oliphant	2000
Seth Lindberg	1996
Alan McIntyre	1996
Curt Waltman	1995
Yaling Wang	1994
Brian Cousins	1992

Undergraduate Research Students (some dates approximate)

Malena Rybacki (REU student from Univ. of Pittsburgh)	2022
Asdjoa Sakwa (REU Student)	2022
Bianca Nivara	2021-2022
Tianlei Yan	2018-2020
Liz Haberland-Ervin	2017-2019
Tomoki Kato , UW-Madison	2017-2019
Justin Twardowski , UW-Madison (Senior thesis) Electrospinning of nanoscale polymers	2018-2019
Riley Whitehead (ACS Scholar), UW-Madison Novel approaches to water purification using conductive polymers	2016-2019
Christopher Lupton , REV (research experience for veterans), Cal State- Chico Synthesis of Cu ₃ PO ₄ nanoparticles for nano-agriculture applications	2019
Mynneliz Sanchez , REU student from University of Puerto Rico – Cayey	2019
Alyssa Olson , REU student from UW-Whitewater In situ analysis of lithium ion battery electrode chemistry	2019
Junmian Zhu , REU student from Grinnell College Atomic Force Microscopy, AFM nanomechanical mapping of solid-electrolyte Interphase, SEI Layer formation in lithium ion batteries	2018
Kari Weiss , UW-Madison Photoemission from diamond-metal composites	2018
Adarsh Suresh , Hildale Award Recipient Nanophotonic Ag-diamond composites	2018
Takunda Masike , REU Student from U. Washington Development of a microwave antenna for nanoparticle detection by optically detected magnetic resonance, ODMR	2018
Larissa Davis , REU Student from Lawrence Univ. Synthesis of ligands for functionalization of diamond	2018
Micaela Homer , REU Student from Harvey Mudd, Morphology control during synthesis of CuO nanoparticles	2018
Rachel Blundell , REU student from University of Puerto-Rico – Rio Piedras, Solution-phase and gas-phase amino termination of diamond	2018
*Zulmari Silva Pedraza , REU Student, University of Puerto Rico – Cayey	2018

Synthesis of complex metal oxide nanomaterials	
Alice Hornrein	2016-2017
Synthesis of Nano-ruby as a nanoscale optical probe	
Kasey Rivera , REU student from Univ. Florida	2017
Synthesis of metal phosphate nanomaterials	
Nafisa Ibrahim , REU student, Univ. of Minnesota	2017
Synthesis of complex oxide nanomaterials	
Megan Taylor , REU Student, Tuskegee University	2017
Radical-initiated functionalization of nanodiamond for environmental studies	
Madeleine Meyer	2013-2017
Synthesis of TiO ₂ nanoparticles	
Lilly Klaper	2015-2016
Functionalization of AFM tips for selective chemical recognition	
Hunter Wayland , REU Student,	2014
Synthesis of nanoscale LiNiMnCo, "NMC" Cathode Materials via flux growth	
Edward (Ted) McClain , REU student,	2014
Construction of an automated system for atomic layer deposition.	
Stephanie Sanders , REU student from Albion College	2013
Design of a prototype surface calorimeter	
James Rosenberger	2010-2013
Connor Firth	2012-2013
Electrocatalytic reduction of CO ₂ .	
Ailin Mao	2012-2013
Characterization of next-generation battery materials.	
Kajsa Jackson	2012-2013
Synthesis of novel ligands for nanoparticles	
Brian Ferrer	2013
Synthesis of nanoparticles	
Vong Lor	2013-2014
Interaction of natural organic material with nanoparticles	
Richard Bartrop , visiting student from Bristol University, UK,	2012-2013
Lithiated Silicon Anodes for Next-Generation Lithium Ion Batteries	
Phillipa Armitage-Mattin , visiting student from Bristol University, UK,	2013-2013
Synthesis of novel ligands for nanoparticle studies	
Yujue Wang , visiting student from Nanjing University,	2012-2013
Fabrication and Testing of Next-generation lithium-ion batteries	
Shaoyang Wang ,	2011-2012
Click chemistry on metal oxide surfaces	
Yan Lao	2011-2012
Lithiated silicon for lithium ion batteries	
Jesse Pankamo	2011-2012
Novel surface ligands for stable nanoparticles	
Nigel Becknell	2010-2012
Photocatalytic reduction of CO ₂ on diamond	
Jesse Pankamo	2011-2012
Synthesis of Novel Surface-binding Ligands	
Allison Cardiel , REU student from Carleton College	2011
Click chemistry for dyadic nanoparticles	
Shaoyang Wang	2012
Click chemistry on metal oxide nanoparticles	
Maximilian Turner	2011-2012

Novel high-temperature batteries using carbon monofluoride cathode.	
Christine Ferng	2010-2011
Chemical functionalization of diamond to resist protein binding	
Prashanth Prabakaran	
Synthesis of Eu:YVO ₄ nanoparticles for nano-imaging applications	
Zack Gerbec	2008-2009
Grafting of molecules to metal oxide surfaces	
Anthony Nguyen	2006-2008
Synthesis of Nanocrystalline Titania	
Jake Henrichs	2005-2007
Nanoparticle interactions with biological cells	
Shawn Andrews	2004-2006
Photocatalysis at nanocrystalline diamond	
Libby Smith	2003-2004
Electrochemical Modification of Silicon Surfaces	
Fatlume Berisha (now faculty at Prishtina Univ., Kosovo)	2003-2004
Synthesis of Molecules for Surface Photoligation Processes	
Matt Kim	2002-present
Surface Reactions of Metal Sulfide Minerals	
Guobin Zhang	2002
Chemical Modification of Carbon Nanotubes	
Jessie Birrenkott	1996-1997
Dissolution of Pyrite Minerals	
Paul Kirsch (Hilldale Fellow)	1993-1995
STM studies of TiO ₂ in Electrochemical Solutions	
Joseph Sweeney	1994
Decomposition of Nickel Carbonyl for fabrication of STM Tips	
Jason Young,	1992-1993
Fabrication of Sub-micron Insulating Tips for Scanning Tunneling Microscopy"	
Lisa Buller (Hilldale Fellow)	1990-1992
B.S. Thesis, "STM Studies of the Oxidation of the Si(001 Surface"	
Steven Brown,	1993
Electrochemical Scanning Tunneling Microscope	
David Reeder	1992-1993
Software for scanning tunneling microscopy	
Ernest Darkoh-Ampem	1992-1993
Senior Project, "Electrochemical STM"	

K-12 research supervision

Madison School District Summer Science Internship Program, full-time summer research by high-school students

Kari Weiss,	2017, 2018
Anion effects on hydroxyl radical formation in aqueous media (currently undergrad at UW-Madison)	
Kate Scholz,	2014, 2015
Electrochemistry of lithium ion battery electrodes	
Newton Wolfe	2013, 2014
Field emission into liquids, completed B.S. at UW-Madison	
Sohil Shah,	2011, 2012
Chemically Directed Assembly of Nanoparticle Heterojunctions	
Nicholas Pasternack	2011

Electrochemistry of the Zn/O ₂ Interface Graduate U. Florida Immunology, now at Oxford University.	
Pratyusha Kalluri Density functional calculations of molecular adsorbates on metal oxides. MIT Class President 2012, B.S. 2016, now Ph.D. candidate	2010
Alex Huhn Growth of ZnO Nanorods	2009
Bennett Mortenson, Photocatalytic Reduction of CO ₂ .	2008
Brian Ji CdSe Nanoparticles	2007
Aaron Burr (Edgewood High School) Growth of metal nanotubes	2006
Eric Meyer, Growth of CdSe Nanocrystals, B.S. Chemistry Yale 2011	2005, 2006
Jesse Benck Photochemical Modification of Nanocrystalline Diamond, Completed Ph.D. in Chemical Engineering	2004
Paresh Agarwal Growth of hybrid metal-semiconductor nanowires. Completed BS. MIT, Ph.D. degree in chemistry at UC-Berkeley	2003:
Kate Skog Metal Sulfide Minerals, later completed Ph.D. degree in chemistry at UW-Madison	2002

8th Grade, School Science Mentor Program

8th grade students; ~6-week commitment partnering with a graduate student to do a small project

Predeep Tiwari	2017
Anna Compas	2013
James Tautges	2012
Shivani Kumar	2011
Michael Stoneman	2009
Jordan DuBeau,	2008
Riley Larget,	2007
Bennet Mortenson,	2006
Adam Schneider	, 2005
Rich Pang	2004
Ilari Shafer	2003

Recent Classroom Teaching

Semester	Class
Fall 1997	621 – Instrumental Analysis
Spring 1998	628 – Electronics and Instrumentation
Fall 1998	621 – Instrumental Analysis
Fall 1999	621 – Instrumental Analysis
Spring 2000	630 – Chemistry of Materials
Fall 2001	630 – Chemistry of Materials
Spring 2002	329 – Quantitative Analysis
Spring 2003	329 – Quantitative Analysis
Fall 2003	329 – Quantitative Analysis

Spring 2004	630 – Chemistry of Materials
Fall 2005	628 – Electronics and Instrumentation
Spring 2006	Leave, retention
Fall 2006	630 – Inorganic Materials
Spring 2007	628 – Electronics and Instrumentation
Fall 2007-Spring 2010	Chem 901, intro to graduate school, Team-teaching courses, reduced load as department chair
2011-2012	Sabbatical
Spring 2012	524 –Instrumental Analysis
Fall 2012	630 –Chemistry of Materials
Spring 2013	628 - Electronics and Instrumentation
Fall 2013	329 - Quantitative Analysis
Spring 2014	630 - Chemistry of Materials
Fall 2014	329 - Quantitative Analysis
Spring 2015	329 – Quantitative Analysis
Spring 2016	329 – Quantitative Analysis
Fall 2016	329 – Quantitative Analysis
Spring 2017	329 – Quantitative Analysis
Fall 2017	652: Chemistry of Inorganic Materials
Spring 2018	L&S Teaching relief (CSN site visit and administration)
Fall 2018	Sabbatical leave
Spring 2019	L&S Teaching Relief (CSN site visit and administration)
Fall, 2019	630: Chemistry of Inorganic Materials
Spring, 2020	Teaching Relief (CSN renewal and administration)
Fall 2020	327-Quantitative Analysis
Spring 2020	327- Quantitative Analysis
Fall 2021	L&S Teaching relief
Spring 2022	L&S Teaching relief
Fall 2022	327- Quantitative Analysis

Major Extramural Support as PI or Co-PI, 1990-present

Agency	Number	PI	Co-PI	Title	Start	End	Amount Funded
ONR		Hamers		Nanometer-Scale Characterization of The Static And Dynamic Electronic Properties Of Semiconductor Materials By Scanning Tunneling Microscopy	1/15/91	1/14/94	\$337,850
NSF	9017288	Hamers		Fundamental Studies of Adsorption And Catalysis On Metal Surfaces By Scanning Tunneling Microscopy	5/1/91	10/31/94	\$291,600
NSF	9203590	Bronikowski		Postdoctoral Research Fellowships In Chemistry	7/1/92	8/31/94	\$64,000
NSF	9253704	Hamers		Presidential Faculty Fellow/Surface Chemistry of Solid State materials	9/1/92	8/31/97	\$500,000
ONR		Hamers		Nanometer-Scale Characterization of The Static and Dynamic Electronic Properties of Semiconductor Materials by Scanning Tunneling Microscopy	1/15/94	1/14/97	\$307,443
NSF	9403845	Hamers		Atomic-Scale Mechanisms of Heterogeneous Catalysis and the Chemistry of Metallic Materials	7/15/94	6/30/99	\$520,000
NSF	9521731	Banfield	Hamers	Chemical and Bacterial Reactions at the Surfaces of Environmentally-Important Metal Sulfide Minerals: Linking Atomic and Field Scales	9/1/95	8/31/98	\$324,940
Union Carbide		Hamers		Innovation Recognition Program	5/9/96		\$20,000
ONR		Hamers		Nanometer-Scale Characterization of The Static and Dynamic Electronic Properties of Semiconductor Materials by Scanning Tunneling Microscopy	1/15/97	1/14/00	\$310,887
NSF	9703737	Hamers		Interfacial Chemistry of Organic Molecules and Self-Assembled Organic Layers on Si(001) Surfaces	4/15/97	3/31/00	\$300,000
EPA		Banfield	Hamers	Physiochemical and Microbial Controls on The Speciation And Release of Arsenic into Ground And Surface Waters	1/1/98	12/31/00	<u>\$31,2496</u>
DTRA/Advanced Diamond Technol.		Carlisle	Hamers (subcontract)	Diamond MEMS Biosensors for Real-Time Sensing of Water-Based Chemical/Biological Threats	2006	2007	\$120,000
NSF	9901293	Hamers		Preparation and Nanometer-Scale Characterization of P-	7/1/99	12/31/02	\$396,760

				Conjugated Organic Thin Film Materials			
NSF	0071385	Hamers		Chemistry of Organic Molecules On (001) Surfaces of Group IV Semiconductors	8/15/00	7/31/03	\$316,000
NSF	0210806	Hamers	Smith, van der Weide	NIRT: Nanotubes and Nanowires as Biological Sensors and Actuators: Approaching the Single-Molecule Limit	8/01/02	10/31/06	\$1,449,999
IBM		Hamers		IBM Faculty Award	8/01/02	None	\$20,000
NSF	0314618	Hamers		Surface Chemistry for Molecular and Biomolecular Interfaces to Group IV Semiconductors	8/1/03	7/31/06	\$440,000
Sensir Technologies		Hamers		Development of an Electronic Biosensor	8/1/03	7/31/04	\$150,000
NSF	0330257	Hamers		SENSORS: Direct Electronic Sensing for Real-Time Biological Detection	9/1/03	12/31/06	\$375,000
NSF	0311582	Hamers	McClain	The Study of Acid Mine Drainage in a Quantitative Analysis Course	9/1/03	8/31/05	\$22,500
NIH R21		Hamers		Novel Surface Chemistry for DNA Immobilization	5/1/04	8/31/05	\$203,482
Gentel Biosurfaces		Hamers		Robust Carbon Biochip Surfaces	7/15/04	4/14/05	\$32,000
DOE		Carpick	Hamers	Subtask: Development and Integration of Single Asperity Nanotribology Experiments	8/1/04	7/31/05	\$14,000
Smiths Detection		Hamers		Development of An Electronic Biosensor	1/1/05	7/31/05	\$50,000
Smiths Detection		Hamers		Development of An Electronic Biosensor	8/1/05	7/3/07	\$50,000
NSF	0613010	Hamers		Chemical and Biochemical Surface Functionalization of Group IV Materials	8/15/06	7/31/09	\$399,000
Polyron Technol.		Hamers		Integration of Aligned Carbon Nanofiber Electrodes with Organosilicon Electrolytes for High Energy-Density Supercapacitors	7/31/06	12/31/07	\$30,694
NSF	0706559	Hamers		Electrocatalytically Active Molecule-Nanostructure Hybrid Materials	1/1/08	12/31/10	\$390,000
NSF	0741901	Hamers (as chair), transferred to Weisshaar		Upgrade of A Cyber-Enabled Electron Paramagnetic Resonance (EPR) Spectrometer For Research And Education	1/1/08	1/31/11	\$305,415
Silatronix		Hamers		Organosilicon Electrolytes	2/1/08	9/30/11	\$74,000
Silatronix		Hamers		Organosilicon Electrolytes	6/1/08	9/30/11	\$416,995
NSF	0826749	Hamers	Singh, Robertson	Workshop on Materials Science and Materials Engineering Education - Educating the Enablers of Tomorrow's	7/15/08	8/31/09	\$115,000

				Technologies, Arlington, VA, 9/17-19/08			
NSF	0840494	Hamers/ Weisshaar		Upgrade of Cyber-Enabled Facility for Computational Chemistry Research And Education	8/1/09	7/31/12	\$562,307
NSF	0911543	Hamers		Multifunctional Molecular Interfaces to Metal Oxide Surfaces	8/1/09	9/30/13	\$603,624
DOE	DE- SC00021 60	Hamers		SISGR: Ultra-Stable Molecule- Surface Architectures at Metal Oxides: Structure, Bonding, and Electron-Transfer Processes	9/15/09	9/14/13	\$700,000
DOE	DE- SC00021 62	Jin	Hamers, Wright	Fundamental Studies of Charge Transfer in Nanoscale Heterostructures of Earth- Abundant Semiconductors For Solar Energy Conversion	9/15/09	12/14/18	\$4,884,400
NSF	0946901	Hamers Weisshaar	Landis, Stahl	Acquisition of Equipment For Screening Catalytic Reactions At High-Pressure	1/1/10	12/31/12	\$326,272
NSF	1048642	Hamers Weisshaar		Acquisition of a 400 Mhz NMR Spectrometer for Chemical Research and Learning	12/15/10	11/30/13	\$330,602
NSF	1138118	Grassian	Hamers	Chemistry Workshop on Nanomaterials and the Environment	6/15/11	5/31/13	\$99,999
Silatronics		Hamers		Organosilicon Electrolytes	7/1/11	11/30/14	\$250,000
Dow Chemical	235803	Hamers		Stabilization of Nickel Manganese Cobalt Oxide High- Voltage Cathodes for Lithium Ion Batteries	12/1/11	5/31/17	\$ 1,345,058
AIR FORCE	FA9550- 12-1- 0063	Hamers		Dynamics of Photoexcitation and Photocatalysis at Nanostructured Carbon Interfaces	3/15/12	3/14/15	\$250,315
NSF	1207281	Hamers		Photoelectron Emission at Diamond-Liquid Interfaces	6/1/12	5/31/15	\$470,000
NSF	1152604	Pedersen	Hamers	Molecular Scale Study of Peptide Interaction With Metal Oxide Nanoparticles	7/15/12	6/30/16	\$433,000
NSF	1240151	Hamers		CCI Phase I: Center for Sustainable Nanotechnology	9/15/12	8/31/15	\$1,844,429
NSF	1310293	Hamers		Functional Carbon Nano-Skins: Integrating Nanostructured Oxides with Molecular Systems	9/1/13	8/31/16	\$400,000
NSF	1262750	Greenberg	Hamers	REU Site: Chemistry of Materials for Renewable Energy	1/1/14	9/30/17	\$277,335
AIR FORCE	FA9550- 14-1- 0220	Hamers	Nathanson, Schmidt	Hot Electron Chemistry at Solid-Liquid Interfaces	8/15/14	5/14/18	557,734
NSF	1507432	Hamers		Photoelectron Emission at Diamond-Liquid Interfaces	8/1/15	7/31/18	\$473,801
NSF	1503408	Hamers		Center for Sustainable Nanotechnology	9/1/15	8/31/20	\$ 20,000,000

NSF	I644338	Hamers		Needs and Opportunities For Mid-Scale Instrumentation In Chemistry	7/1/16	6/30/17	\$80,578
Silatronix		Hamers		Thermal and electrochemical stability of organosilicon electrolytes	1/1/17	12/31/18	\$240,000
Hltachi		Hamers		Hitachi Chemical Research Agreement	1/1/17	4/30/17	\$10,000
NSF	I659223	Greenberg	Hamers	REU Site: Chemistry of Materials for Renewable Energy	3/1/17	5/29/20	\$337,308
Silatronix/ ONR		Hamers		Interaction of Organosilicon Electrolytes With Silicon Anodes	7/1/18	6/30/20	\$219,000
DOE	DE-SC0002162 (continuation)	Jin	Hamers, Wright	Fundamental Studies of Charge Transfer in Nanoscale Heterostructures of Earth-Abundant Semiconductors For Solar Energy Conversion	12/15/18	12/14/21	\$500,000
NSF	I839174	Hamers	Eriksson, Kats	RAISE-TAQS: Quantum-Based Chemical Sensing	9/15/18	8/31/23	\$1,000,000
NSF		Hamers		Diamond Photoemission	8/15/19	8/14/23	\$520,000
Silatronix /ONR	MSN225074	Hamers		Organosilicon Electrolytes and High voltage Cathodes	7/8/19	7/18/21	\$258,208
ACS	MSN232744	Hamers		Bridge to the Chemistry Doctorate	5/1/19	6/30/22	\$180,000
NSF		Hamers		Center for Sustainable Nanotechnology, 5-year renewal	9/1/20	8/31/25	\$20,000,000
ONR/Silatronix	MSN257330	Hamers		Organosilicon Electrolytes	8/25/21	6/30/23	\$161,184
ONR/Silatronix	MSN269313			Fundamental Insights into Lithium Iron Phosphate and Lithium Titanate Performance as Electrodes in Lithium-Ion Cells with Organosilicon Electrolytes	9/01/22	8/31/24	\$255,612
TOTAL							\$66,230,827

Robert J. Hamers
Publications and Patents

Published and/or Accepted Publications:

- (421) Morris, L. V.; Ortiz-Ledon, C. A.; Hamers, R. J. Adapting Simultaneous in Operando Electrochemical Quartz Crystal Microbalance and Electrochemical Impedance Spectroscopy to Studies of Solid Electrolyte Interface Layer Formation on Amorphous Silicon Anodes. *J. Electrochem. Soc.* **2023**, *170* (5), 6. DOI:<http://dx.doi.org/10.1149/1945-7111/accf3d>.
- (421) Sharan, D.; Wolfson, D.; Green, C. M.; Lemke, P.; Gavin, A. G.; Hamers, R. J.; Feng, Z. V.; Carlson, E. E. Chronic exposure to complex metal oxide nanomaterials induces production of reactive oxygen species in bacteria. *Environ. Sci.-Nano* **2023**, *15*; Early Access. DOI:<http://dx.doi.org/10.1039/d2en01144a>
- (420) Kinsley, P. C.; Green, C. M.; Borgatta, J.; Earl, C. E. K.; Laudadio, E. D.; Hamers, R. J. Nanometer-Thick Carbon Coatings with Covalent Chemical Functionalization of Metal Oxide Nanoparticles for Environmental and Biological Applications. *ACS Appl. Nano Mater.* **2023**, *6* (5), 3525-3536. DOI:<http://dx.doi.org/10.1021/acsanm.2c05288>
- (419) Krueger, A.; Yang, N.; Hamers, R. J. It Is All at the Surface: The Art of Tailoring Carbon Materials Using Surface Chemistry. *Acc Chem Res* **2023**, *56* (4), 413, Editorial Material. DOI:<http://dx.doi.org/10.1021/acs.accounts.3c00040>
- (418) Li, F.; Mitchell, H. D.; Mensch, A. C.; Hu, D.; Laudadio, E. D.; Hedlund Orbeck, J. K.; Hamers, R. J.; Orr, G. Expression Patterns of Energy-Related Genes in Single Cells Uncover Key Isoforms and Enzymes That Gain Priority Under Nanoparticle-Induced Stress. *ACS Nano* **2022**, *16* (5), 7197-7209. DOI:<http://dx.doi.org/10.1021/acsnano.1c08934>
- (417) Liang, D.; Liu, J.; Heinz, H.; Mason, S. E.; Hamers, R. J.; Cui, Q. Binding of polar and hydrophobic molecules at the LiCoO(2) (001)-water interface: force field development and molecular dynamics simulations. *Nanoscale* **2022**, *14* (18), 7003-7014. DOI:<http://dx.doi.org/10.1039/d2nr00672c>
- (416) Li, S.; Francaviglia, L.; Kohler, D. D.; Jones, Z. R.; Zhao, E. T.; Ogletree, D. F.; Weber-Bargioni, A.; Melosh, N. A.; Hamers, R. J. Ag-Diamond Core-Shell Nanostructures Incorporated with Silicon-Vacancy Centers. *ACS Mater Au* **2022**, *2* (2), 85-93. DOI:<http://dx.doi.org/10.1021/acsmaterialsau.1c00027>
- (415) Kinsley, P. C.; Zeng, A. P.; Orbeck, J. K. H.; Debow, S.; Zander, Z. B.; Heaney, P. J.; Hamers, R. J. Reactivity passivation of red phosphorus with thin plasma-deposited carbon coating. *Appl. Surf. Sci.* **2022**, *152791*. DOI:<https://doi.org/10.1016/j.apsusc.2022.152791>
- (414) Curtis, B. J.; Niemuth, N. J.; Bennett, E.; Schmoldt, A.; Mueller, O.; Mohaimani, A. A.; Laudadio, E. D.; Shen, Y.; White, J. C.; Hamers, R. J., Cross-species transcriptomic signatures identify mechanisms related to species sensitivity and common responses to nanomaterials. *Nature Nanotechnology* **2022**, 1-9.
- (413) Hamers, R. J.; Bates, D. M.; Aguayo Barragan, K. J.; Gressel, D. G.; Schweitzer, B. S.; Villalona, J.; Barta, C. A.; Burstyn, J.; Greenberg, A. E.; Schwartz, M. P., Improving climate and outcomes for underrepresented chemistry graduate students at a major research university: A case study. *Journal of Chemical Education* **2021**, *99*, 452-460.

- (412) Jones, Z. R.; Niemuth, N. J.; Zhang, Y.; Protter, C. R.; Kinsley, P. C.; Klaper, R. D.; Hamers, R. J., Use of magnetic modulation of nitrogen-vacancy center fluorescence in nanodiamonds for quantitative analysis of nanoparticles in organisms. *ACS Measurement Science Au* **2022**, 2, 351-360.
- (411) Kinsley, P. C.; Zeng, A.; Orbeck, J. K. H.; Debow, S.; Zander, Z. B.; Heaney, P. J.; Hamers, R. J., Reactivity passivation of red phosphorus with thin plasma-deposited carbon coating. *Applied Surface Science* **2022**, 587, 152791.
- (410) Li, F.; Mitchell, H. D.; Mensch, A. C.; Hu, D.; Laudadio, E. D.; Hedlund Orbeck, J. K.; Hamers, R. J.; Orr, G., Expression patterns of energy-related genes in single cells uncover key isoforms and enzymes that gain priority under nanoparticle-induced stress. *ACS Nano* **2022**, 16, 7197-7209.
- (409) Liang, D.; Liu, J.; Heinz, H.; Mason, S. E.; Hamers, R. J.; Cui, Q., Binding of polar and hydrophobic molecules at the licoo 2 (001)-water interface: Force field development and molecular dynamics simulations. *Nanoscale* **2022**, 14, 7003-7014.
- (408) Niemuth, N. J.; Curtis, B. J.; Laudadio, E. D.; Sostare, E.; Bennett, E. A.; Neureuther, N. J.; Mohaimani, A. A.; Schmoldt, A.; Ostovich, E. D.; Viant, M. R., Energy starvation in daphnia magna from exposure to a lithium cobalt oxide nanomaterial. *Chemical Research in Toxicology* **2021**, 34, 2287-2297.
- (407) Shen, Y.; Borgatta, J.; Ma, C.; Singh, G.; Tamez, C.; Schultes, N. P.; Zhang, Z.; Dhankher, O. P.; Elmer, W. H.; He, L., Role of foliar biointerface properties and nanomaterial chemistry in controlling cu transfer into wild-type and mutant arabidopsis thaliana leaf tissue. *Journal of Agricultural and Food Chemistry* **2022**, 70, 4267-4278.
- (406) Bachman, B.F.; Zhu, D.; Bandy, J.; Zhang L.H.; Hamers, R.J. Detection of aqueous solvated electrons produced by photoemission from solids using transient absorption measurements. *ACS Measurement Science Au* **2021**, 2, 46-56.
- (405) Li, S; Francaviglia, L.; Kohler, D.; Jones, Z.R.; Zhao, Eric; Ogletree, D.; Weber-Bargioni, Alexander; Melosh, Nicholas; Hamers, R.J.; Ag-Diamond Core-shell Nanostructures Incorporated with Silicon-Vacancy Centers, *ACS Materials Au* **2021**, 2, 85-93..
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- (403) Zhang, Y.; Dahal, U.; Feng, Z. V.; Rosenzweig, Z.; Cui, Q.; Hamers, R. J., Influence of Surface Ligand Molecular Structure on Phospholipid Membrane Disruption by Cationic Nanoparticles. *Langmuir* **2021**, 37, 7600-7610.
- (402) Yin, H.; Mensch, A. C.; Lochbaum, C. A.; Foreman-Ortiz, I. U.; Caudill, E. R.; Hamers, R. J.; Pedersen, J. A., Influence of Sensor Coating and Topography on Protein and Nanoparticle Interaction with Supported Lipid Bilayers. *Langmuir* **2021**, 37, 2256-2267.
- (401) Henke, A. H.; Laudadio, E. D.; Orbeck, J. K. H.; Tamijani, A. A.; Hoang, K. N. L.; Mason, S. E.; Murphy, C. J.; Feng, Z. V.; Hamers, R. J., Reciprocal redox interactions of lithium cobalt oxide nanoparticles with nicotinamide adenine dinucleotide (NADH) and glutathione (GSH): toward a mechanistic understanding of nanoparticle-biological interactions. *Environmental Science: Nano* **2021**, 8, 1749-1760.
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- (398) Bachman, B. F.; Jones, Z. R.; Jaffe, G. R.; Salman, J.; Wambold, R.; Yu, Z.; Choy, J. T.; Kolkowitz, S. J.; Eriksson, M. A.; Kats, M. A.; Hamers, R. J., High-Density Covalent Grafting of Spin-Active Molecular Moieties to Diamond Surfaces. *Langmuir* **2021**, *37*, 9222-9231.
- (397) Wambold, R.; Yu, Z.; Xiao, Y.; Bachman, B. F.; Jaffe, G. R.; Kolkowitz, S.; Choy, J. T.; Eriksson, M. A.; Hamers, R. J.; Kats, M. A. In *Adjoint-optimized nanoscale light extractor for enhanced luminescence from color centers in diamond*, 2020 IEEE Research and Applications of Photonics in Defense Conference (RAPID), IEEE: 2020; pp 1-3.
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- (395) Niemuth, N. J.; Zhang, Y.; Mohaimani, A. A.; Schmoldt, A.; Laudadio, E. D.; Hamers, R. J.; Klaper, R. D., Protein Fe-S Centers as a Molecular Target of Toxicity of a Complex Transition Metal Oxide Nanomaterial with Downstream Impacts on Metabolism and Growth. *Environmental Science & Technology* **2020**, *54*, 15257-15266.
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- (393) Foreman-Ortiz, I. U.; Liang, D.; Laudadio, E. D.; Calderin, J. D.; Wu, M.; Keshri, P.; Zhang, X.; Schwartz, M. P.; Hamers, R. J.; Rotello, V. M.; Murphy, C. J.; Cui, Q.; Pedersen, J. A., Anionic nanoparticle-induced perturbation to phospholipid membranes affects ion channel function. *Proc Natl Acad Sci U S A* **2020**, *117*, 27854-27861.
- (392) Advance material modulation of nutritional and phytohormone status alleviates damage from soybean sudden death syndrome and increases crop growth, *Nature Nanotechnology*, 2020,15,1033-1042..
- (391) Shen, Yu; Borgatta, Jaya; Ma, Chuanxin; Elmer, Wade; Hamers, Robert; White, Jason; Copper nanomaterial morphology and composition control foliar transfer through the cuticle and mediate resistance to root fungal disease in tomato (*Solanum lycopersicum*), *Journal of Agricultural and Food Chemistry Manuscript*, **2020**, *68*, 11327-11338.. doi.org/10.1021/acs.jafc.0c04546.
- (390) Abbaspour-Tamijani, A.; Bennett, J. W.; Jones, D. T.; Cartagena-Gonzalez, N.; Jones, Z. R.; Laudadio, E. D.; Hamers, R. J.; Santana, J. A.; Mason, S. E. DFT and thermodynamics calculations of surface cation release in LiCoO₂. *Applied Surface Science* **2020**, *515*, 145865. DOI: /10.1016/j.apsusc.2020.145865
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U.S. Patents (All patents submitted by WARF with Hamers as an inventor)

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- (2) U.S. Patent #5,908,692, "Controlled Organic Monolayers and Methods of Preparation Thereof", by R.J. Hamers, J.S. Hovis, and S. Lee, Issued June 1, 1999.
- (3) U.S. Patent #6,569,979, "Modified Carbon, Silicon, and Germanium Surfaces", T.C. Strother, L.M. Smith, and R.J. Hamers, inventors, Issued May 27, 2003.
- (4) US Patent #6,689,858, "Halogen-modified Surfaces of Silicon, Germanium, and Diamond", R.J. Hamers, W. Cai, L.M. Smith, T.C. Strother.
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- (8) U.S. Patent #7,612,985, "Electrochemical double-layer capacitor using organosilicon electrolytes", V. Dementiev, R. West., R.J. Hamers, and K.Y. Tse, Issued Nov. 3, 2009., Divisional application w/7,466,539
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- (10) US Patent # 7,582,422, “Modified Carbon and Germanium Surfaces”, Todd C. Strother, Lloyd M .Smith, and Robert J. Hamers, inventors, issued 2009., This is a continuation in part of patent #3 above, extending claims from silicon to diamond and other forms of carbon.
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- (14) U.S. Patent #8,986,532, “Methods and systems for the reduction of molecules using diamond as a photoreduction catalyst” R.J. Hamers and Di Zhu, inventors, Patent issued March 24, 2015.
- (15) US Patent #9,917,328, “Halogenated organosilicon electrolytes, methods of using them, and electrochemical devices containing them”; Jose Adrian Pena Hueso, Jian Dong, Michael Pollina, Monica Usrey, Robert J. Hamers, Robert C. West, and David Osmalov, inventors. Patent issued March 13, 2018.
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Patent Applications Submitted/In Process

Patent application, Synthesis of Ammonia Using Cycle-Generated Hydrogen Sulfide, R.J. Hamers and B.F. Bachman, inventors, US Patent Application 20220154313 Filed Oct. 29, 2021