

CURRICULUM VITAE

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Harry S. Mosher Professor and Professor, by courtesy, of Applied Physics
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Education

1975	B.S. Physics (Final Honors) B.S. Electrical Engineering (Final Honors) A.B. Mathematics (summa cum laude)	Washington University St. Louis, Missouri
1978	M.S. (Physics)	Cornell University Ithaca, New York
1982	Ph.D. (Physics)	Cornell University Ithaca, New York

Career Summary

2014-	Faculty Fellow, ChEM-H at Stanford
2011-2014	Chemistry Department Chair
2005-	Professor, by courtesy, of Applied Physics, Stanford University
2002-	Harry S. Mosher Professor of Chemistry, Stanford University
1998-	Professor of Chemistry, Stanford University
1995-1998	Distinguished Chair in Physical Chemistry, Department of Chemistry and Biochemistry, University of California, San Diego
1997-1998	Robert Burns Woodward Visiting Professor, Department of Chemistry, Harvard University
1989-1995	Research Staff Member and Project Leader, IBM Almaden Research Center, San Jose, California
1993-1994	Visiting Guest Professor, Laboratory for Physical Chemistry, ETH Zentrum (Swiss Federal Institute of Technology), Zürich, Switzerland
1988-1989	Manager, Laser-Materials Interactions, IBM Almaden Research Center, San Jose, California
1981-1988	Research Staff Member, IBM Almaden Research Center, San Jose, California
1975-1981	Graduate Research Assistant and NSF Graduate Fellow, Laboratory for Atomic and Solid State Physics, Cornell University, Ithaca, New York
1972-1975	Research Assistant, Department of Physics, Washington University, St. Louis, Missouri

Honors

Nobel Prize in Chemistry, 2014
John Gamble Kirkwood Medal for Outstanding Achievement in Science, from Yale University and the New Haven Section of the American Chemical Society, 2013
Engineering Alumni Achievement Award, Washington University, 2013
Peter Debye Award in Physical Chemistry, 2013
Pittsburgh Spectroscopy Award, 2012
Irving Langmuir Prize in Chemical Physics, 2009
Wolf Prize in Chemistry, 2008
Member, National Academy of Sciences, 2007
Fellow, American Association for the Advancement of Science, 2004
Geoffrey Frew Fellow, Australian Academy of Sciences, 2003
Harry Stone Mosher Professor of Chemistry, Stanford University, 2002
Fellow, American Academy of Arts and Sciences, 2001
Earle K. Plyler Prize for Molecular Spectroscopy, American Physical Society, 2001
Robert Burns Woodward Visiting Professor, Department of Chemistry, Harvard University, Winter 1997-1998
First holder of Distinguished Professorship in Physical Chemistry, Department of Chemistry and Biochemistry, University of California, San Diego, 1995-1998.
Visiting Guest Professor of Physical Chemistry, Swiss Federal Institute of Technology (ETH-Zürich), 1993-1994
IBM Outstanding Technical Achievement Award for Single-Molecule Detection and Spectroscopy, November 22, 1992
Fellow, American Physical Society, November 16, 1992
Fellow, Optical Society of America, May 28, 1992
Senior Member, IEEE, June 17, 1988
IBM Outstanding Technical Achievement Award (with R. M. Macfarlane and R. M. Shelby) for Photon-Gated Spectral Hole-Burning, July 11, 1988
National Winner of the Roger I. Wilkinson Outstanding Young Electrical Engineer Award for 1984, from the electrical engineering honorary society, Eta Kappa Nu, April 22, 1985

Lectureships

John Gamble Kirkwood Lecturer, Department of Chemistry, Yale University, September 2013
Walter Kauzmann Lecturer in Biophysical Chemistry, Princeton University, September 2013
E. K. C. Lee Lecturer, Department of Chemistry, University of California, Irvine, May 2013
Samuel Krimm Lecture in Biophysics, University of Michigan, April 2013
Ehrenfest Colloquium Lecturer, University of Leiden, The Netherlands, June 2012
Pittsburgh Conference Lecturer, Department of Chemistry, University of Pittsburgh, 2011
Leica Scientific Forum Lecturer, July 2011
Willis Flygare Memorial Lecturer, Department of Chemistry, University of Illinois at Urbana-Champaign, 2011
Joe L. Franklin Lecturer, Department of Chemistry, Rice University, 2010
William Lloyd Evans Lecturer, Department of Chemistry, The Ohio State University, 2009
Karl Friedrich Bonhoeffer Lecturer, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany, 2009

Neil Gordon Frontiers in Chemistry Lecturer, Department of Chemistry, Wayne State University, 2009
A. S. Noyes Lecturer, Department of Chemistry and Biochemistry, University of Texas at Austin, 2009
DuPont-Marshall Lecturer, Department of Chemistry, University of Pennsylvania, 2008
Herbert H. King Lecturer, Department of Chemistry, Kansas State University, 2006
Edwin Yunker Lecturer, Department of Physics, Oregon State University, 2006
A. R. Gordon Distinguished Lecturer, Department of Chemistry, University of Toronto, 2006
Lecturer, Summer School on Visualization, Manipulation, and Modeling of Single Biomolecules, ENS Paris, France, 2005
Geoffrey Frew Fellowship Lecturer, Australian Academy of Sciences (University of Queensland, Australian National University, Swinburne Institute of Technology, University of Melbourne), 2003
International Invited Lecturer (Basel, Berne, Lausanne, Geneva): Conference Universitaire de Suisse Occidentale du 3^{ème} Cycle en Chimie, 2003
Moses Gomberg Lecturer, Department of Chemistry, University of Michigan, 2001
William Draper Harkins Lecturer, Department of Chemistry, University of Chicago, 2001
Guest Lecturer in Frontiers in Spectroscopy, Ohio State University, 1999
Arthur D. Little Lecturer, Department of Chemistry, Massachusetts Institute of Technology, 1995
Ehrenfest Colloquium Lecturer, University of Leiden, The Netherlands, March 1994
Samuel M. McElvain Lecturer, Department of Chemistry, University of Wisconsin, 1993

Patents

U. S. Patent 4,614,116: "Phase Sensitive Ultrasonic Modulation Method for the Detection of Strain-Sensitive Spectral Features", September 30, 1986.
U. S. Patent 5,064,264: "Photorefractive Materials", November 12, 1991.
U. S. Patent 5,361,148: "Apparatus for Photorefractive Two-Beam Coupling," November 1, 1994.
U. S. Patent 5,460,907: "Photorefractive Materials", October 24, 1995.
U. S. Patent 5,607,799: "Optical Photorefractive Article," March 4, 1997.
U. S. Patent 6,046,925: "Photochromic Fluorescent Proteins and Optical Memory Storage Devices Based on Fluorescent Proteins," April 4, 2000.
U. S. Patent 6,280,884: "Process for Photorefractive Index Grating Formation," August 28, 2001.
U. S. Patent 7,068,698 "Room-Temperature Source of Single Photons Based on a Single Molecule in a Condensed Matter Host," June 27, 2006.
U. S. Patent 8,057,655: "Sub-Micron Object Control Arrangement and Approach Therefor," Nov. 15, 2011.
U. S. Patent 8,153,446 B2: "Fluorogenic Compounds Converted to Fluorophores by Photochemical or Chemical Means and Their Use in Biological Systems," April 10, 2012.
U. S. Patent 8,693,742 B2: "Three-Dimensional Single-Molecule Fluorescence Imaging Beyond the Diffraction Limit Using a Double-Helix Point Spread Function," April 8, 2014 (provisional application filed December 17, 2008).

Application: "Firefly Luciferin Analogues, Methods of Making Firefly Luciferin Analogues, and Methods of Imaging," Provisional filed March 10, 2009.

Application: "Enhancement of Molecular Emission by Bowtie Nanoantennas," Provisional filed October 15, 2010; Filed October 17, 2011.

Application: "Apparatus and Method for Localizing Objects for Distance and/or in Three Dimensions Using a Spiral Point Spread Function," Disclosure filed May 17, 2012, Provisional filed December 13, 2011.

Professional Societies and Positions

Advisory Editor, *Chemical Physics Letters* 1998-

Advisory Editor, *ChemPhysChem* 2004-

Advisory Editor, *Single Molecules* 2000-2002

Editorial Advisory Board, *Journal of Physical Chemistry* 2013-

American Academy of Arts and Sciences

American Association for the Advancement of Science

American Chemical Society

Program Committee, Symposium on Optical Properties of Polymers, August 1996

Single-Molecule Symposium Organizer, Physical Chemistry Division, April 1997

Co-Editor, Special Issue of *Accounts of Chemical Research* on Single Molecules and Ions, December 1996

American Physical Society

Chair, Herbert P. Broida Prize Committee 2000

Member, Earle K. Plyler Prize Committee 2001

Symposium Organizer for Laser Science Topical Group, 1992 March Meeting

Symposium Organizer for Laser Science Topical Group, 1993 March Meeting

Institute of Electrical and Electronic Engineers, Lasers and Electro-Optics Society

Assistant Treasurer, 1988 Annual Meeting

Treasurer and Program Committee Member, 1989 Annual Meeting

Symposium Organizer, LEOS 1989 Annual Meeting on Optical Memory and Storage

Materials Research Society

National Academy of Sciences

Optical Society of America

Chair, Fundamental and Applied Spectroscopy Technical Group, 1992-1994

General Chair and Founder, OSA Topical Conference on Persistent Spectral Hole-Burning Science and Applications, 1991

Co-Editor, 2 Special Issues of *J. Opt. Soc. America B* on Persistent Spectral Hole-Burning

Advisory Chair and Program Committee Member, Topical Meeting on Spectral Hole-Burning and Luminescence, 1993-1994

Assistant Chair, Fundamental and Applied Spectroscopy Technical Group, 1992

Society of Photo-Optical Instrumentation Engineers

Program Co-Chair, Symposium on Organic Photorefractive Materials, 1996, 1997, 1998

Program Committee, 1999-2003
Conference on Quantum Electronics and Laser Science
Program Committee, 1992 and 1993
Conference on Lasers and Electro-Optics
Program Committee, 1999
International Conference on Hole-Burning and Single-Molecule Spectroscopies
Program Committee, 1996, 1999, 2003
Gordon Research Conference on Single-Molecule Approaches to Biology,
Co-Vice Chair, 2008; Co-Chair, 2010.

Task Forces and Major University Committees

Chairman, IBM Task Force on Frequency Domain Optical Storage, 1984.
Physics and Mechanisms Member, IBM Task Force on Holographic Optical Storage, 1986.
Co-Chair, Systems and Applications, IBM Optical Storage Initiative, 1988.
Member, Appointments and Promotions Committee, Division of Humanities and Sciences,
Stanford University, 2002-2004.
Member, Nanoinitiative Committee, Stanford University, Winter 2006
Member, NSF Center for Probing the Nanoscale Executive Committee, Fall 2007
Member, Stanford University Health and Safety Committee, 2007-2008
Chair, Stanford University Committee on Health and Safety, 2008-2009, 2009-2010
Member, Stanford University Emergency Management Steering Committee, 2009-2010
Member, Advisory Board, Center for Biological Imaging at Stanford, 2010-
Member, Corporation Visiting Committee, Department of Chemistry, Massachusetts Institute
of Technology, 2013-.

Study Panels and Governmental Committees

Member, NSF SBIR Study Panel, September, 1996.
Member, NIH Bioengineering Symposium Panel on Imaging at the Molecular and Cellular
Levels, February 27-28, 1998.
Co-Chair, Toward Molecular Scale Devices Subgroup, NSF Integrating Themes Workshop
for Physical Chemists, September 18-20, 1998, Keystone, Colorado.
Member, NIH Review Panel, November 1999; September 2000.
Member, FAMOS Update Panel, National Research Council, 1999-2002.
Member, NIH-NIGMS Workshop on Single Molecule Detection and Manipulation, 2000
Member, NSF-Intelligence Community Workshop on Approaches to Combat Terrorism,
2002.
Subgroup Chair, NIH-NIDA Workshop on Emerging Technologies: Analysis of
Endogeneous Biomaterials and Single-Molecule Studies, 2002.
Member, International Review Committee for the Institute of Atomic and Molecular
Sciences (IAMS) of Academia Sinica, Taiwan, 2003.
Member, NIH-BST Molecular Imaging Study Section, 2004.
Member, Pacific Northwest National Laboratory DOE-BES Review Panel, 2005.
Member, DOE Workshop on Single-Molecule Research in the New Millenium, 2005.
Member, Advisory Board, Institute of Atomic and Molecular Sciences (IAMS) of Academia
Sinica, Taiwan, 2005-
Session Chair: NIH Frontiers in Live Cell Imaging Conference, April 19-21, 2006

Member, NIH-NHGRI Study Section, July, 2006.

Member, Board of Scientific Counselors, National Institute of Biomedical Imaging and Bioengineering, 2010-2014