Michael D. Fayer - Curriculum Vitae

Education

University of California at Berkeley, 1969-1974, Ph.D. Chemistry - 1974
Advisor: Professor Charles B. Harris

University of California at Berkeley, 1965-1969, B. S. Chemistry - 1969
Undergraduate National Science Foundation Fellow
Phi Beta Kappa

Academic Positions

David Mulvane Ehrsam and Edward Curtis Franklin Professor of Chemistry
Stanford University, 2000 - on

Professor of Chemistry
Stanford University, 1984 - 2000

Associate Professor of Chemistry
Stanford University, 1980 - 1984

Assistant Professor of Chemistry
Stanford University, 1974 - 1980

Awards and Honors

National Academy of Sciences of the United States of America (since 2007)
American Academy of Arts and Sciences (since 1999)
Peter Debye Award in Physical Chemistry – American Chemical Society (2021)
Pittsburgh Spectroscopy Award –Spectroscopy Society of Pittsburgh (2018)
Ahmed Zewail Award in Ultrafast Science and Technology – American Chemical Society (2014)
Arthur L. Schawlow Prize in Laser Science – American Physical Society (2012)
Ellis R. Lippincott Award – Optical Society of America (2009)
E. Bright Wilson Award for Spectroscopy – American Chemical Society (2007)
Earl K. Plyler Prize for Molecular Spectroscopy – American Physical Society (2000)
Optical Society of America Fellow (since 2009)
Royal Society of Chemistry Fellow (since 2008)
Guggenheim Foundation Fellow (1983)
American Physical Society Fellow (since 1982)
Camille & Henry Dreyfus Foundation Fellow (1977)
Alfred P. Sloan Foundation Fellow (1977)
Stanford University Dean's Award for Distinguished Teaching (1986)

Affiliations

National Academy of Sciences of the United States of America (since 2007)
American Academy of Arts and Sciences (since 1999)
American Chemical Society
American Optical Society

American Physical Society
Royal Society of Chemistry
Sigma Xi

Major Lectures

Edgar Fahs Smith Lecture, University of Pennsylvania and the ACS, Philadelphia, PA, 2021
Bryce L. Crawford, Jr. Memorial Lecture in Chemistry, University of Minnesota, Minneapolis, MN. 2021
2018-2019 Physical/Analytical Impact Lecture, University of Notre Dame, Notre Dame IN, 2019
Foster Lecture, University at Buffalo SUNY, Buffalo, NY, 2018
H. H. King Lecture, Kansas State University, Manhattan, KS, 2017
Arthur William Davidson Lecture, University of Kansas, Lawrence, KS, 2017
Richard M. Noyes Lecture, University of Oregon, Eugene, OR, 2016
Dr. Bruce J. Nelson '74 Distinguished Speaker Series Lecture, Harvey Mudd College, Claremont, CA, 2015
Jefferson Lecture, University of Virginia, Charlottesville, VA, 2014
Frontiers in Chemistry Lecture, Case Western Reserve University, Cleveland, OH, 2014
William D. Harkins Memorial Lecture, University of Chicago, Chicago, Il, 2013
Plenary Lecture, American Physical Society and Optical Society of America Meeting, Rochester, NY, 2012
Harry Emmett Gunning Lectures, University of Alberta, Edmonton, Canada, 2012
Plenary Lecture, New Directions in Microscopy and Ultrafast Spectroscopy Conference, Duke University, Durham, NC, 2009
Clifford B. Purves Lecture, McGill University, Montreal, Canada, 2009
Centenary Lecture, Indian Institute of Science, Bangalore, India, 2008
Research Frontiers Lecture, University of Iowa, 2007
George W. Raiziss Lecture, University of Pennsylvania, 2006
Distinguished Speaker, Joint College Colloquium, University of Arkansas at Little Rock, 2004
Brian Bent Memorial Lecture, Columbia University, 2004
Samuel M. McElvain Lecture, University of Wisconsin at Madison, 2004
Plenary Lecture, 13th International Conference on Photochemical Conversion and Storage of Solar Energy, Snowmass, CO, 2000
H. Willard Davis Lecture, University of South Carolina, 1998
Closs Memorial Lecture, University of Chicago, 1994
Moses Gomberg Lecture, University of Michigan at Ann Arbor, 1992
William Albert Noyes Lecture, University of Texas at Austin, 1990
Arthur D. Little Lecture, Massachusetts Institute of Technology, 1980

Principal Research Interests

The Fayer group is involved in research on the dynamics and interactions of molecules in complex molecular materials. Systems that have mesoscopic structure and other types of complex structures and dynamics are common in nature and have properties that are distinct from a typical bulk material. For example, water in a nanoscopic pool of several hundred water molecules behaves very differently from bulk water. To study such systems, we are applying a

variety of ultrafast nonlinear experiments including two dimensional infrared vibrational echo spectroscopy, other ultrafast IR methods, and ultrafast visible and UV experiments. We are exploring dynamics and intermolecular interactions of molecules in liquids, liquids in nanoscopic environments, room temperature ionic liquids, polymers, polymer membranes, and perovskites. We are also studying solute-solvent dynamics and interactions such as complex formation and dissociation and isomerization. A prominent area of our research is the dynamics of water in nanoconfinement, interacting with interfaces, and with ions, as well as dynamics of biological membranes. Proton transfer in water and other liquids and in nanoscopic systems. We are also investigating highly concentrated aqueous salt solutions. We develop methodologies and theory of ultrafast multidimensional vibrational spectroscopy and other ultrafast optical methods for general probes of structural dynamics in complex molecular systems. We also develop and apply statistical mechanics theory of molecular systems and experimental observables.