

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

Board on Chemical Sciences and Technology
Chemical Sciences Roundtable

500 Fifth Street, NW
Washington, DC 20001

Mesoscale Chemistry

A Workshop by the Chemical Sciences Roundtable

November 6-7, 2014 – Washington, DC

Organizing Committee Member Biographies

Miguel Garcia-Garibay*(co-chair) has been a Faculty member in the Department of Chemistry and Biochemistry since 1992. He came to UCLA after doing Postdoctoral research at Columbia University, which followed his PhD studies at the University of British Columbia, in Canada. The earlier portions of Dr. Garcia-Garibay education were completed in his native, Mexico, at the Universidad Michoacana, where he did research on natural product isolation and characterization. Dr. Garcia-Garibay was promoted to full professor in the year 2000 and he has served as Vice Chair for Education in the Department of Chemistry and Biochemistry since 2005. Dr. Garcia-Garibay is a member of the editorial board of the Journal of the American Chemical Society and the Journal of Organic Chemistry. He has been a member of the CNSI since 2005. His current research efforts are aimed to the development of artificial molecular machinery in highly organized crystalline media, and to the development of green chemistry by taking advantage of organic reactions in molecular nanocrystals.

Patricia A. Thiel*(co-chair) is the John D. Corbett Professor of Chemistry, and a Distinguished Professor of Chemistry and of Materials Science & Engineering at Iowa State University. She is also a Faculty Scientist in the Ames Laboratory. She is active in research, teaching, and administration. In research, she is known for her work in three main areas: nanostructure evolution on surfaces; surface properties and structures of quasicrystals (a complex type of metallic alloy); and the chemistry of water adsorbed on metal surfaces. Thiel is an enthusiastic teacher of physical chemistry. She has held several administrative posts, including chair of the Department of Chemistry. Thiel earned her B.A. in Chemistry from Macalester College, and her Ph.D. in Chemistry from the California Institute of Technology in 1981. After postdoctoral work at the University of Munich as a von Humboldt Fellow, she joined the technical staff at Sandia National Laboratories, Livermore, then moved to Iowa State University in 1983. In her early academic career, Thiel was recognized with awards from the Camille and Henry Dreyfus Foundation and the Alfred P. Sloan Foundation, and by a National Science Foundation Presidential Young Investigator Award. Later, she received the American Chemical Society's Arthur W. Adamson Award, and the American Physical Society's David J. Adler Lectureship. She was also named Fellow of several societies: the American Association for the Advancement of Science, the Materials Research Society, the American Physical Society, and the American Vacuum Society.

Vernon Anderson earned a B.S. in chemical engineering from the University of Missouri-Columbia (1977) and a Ph.D. in biochemistry from the University of Wisconsin-Madison (1981) followed by postdoctoral research at Cornell University. He was an Asst. and Assoc. Prof of

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organic chemistry at Brown University studying enzymes of fatty acid metabolism. After moving to Case Western Reserve University as Professor of Biochemistry and Chemistry he specialized in using stable isotopes to characterize enzyme reactions, metabolism and protein modifications along with continued interests in kinetic and spectroscopic analyses of enzyme reactions. In 2009 he moved to the NIH to become a program director in the Division of Pharmacology, Physiology, and Biological Chemistry where he administers grants in the areas of bioinorganic chemistry, redox enzymology, mitochondrial electron transport and other aspects of bioenergetics.

Bruce Garrett is responsible for the leadership, management, and operations of the Physical Sciences Division at Pacific Northwest National Laboratory. The focus of research in the division is on developing tools and understanding required to control chemical and physical processes in condensed phases and at complex interfaces. Dr. Garrett has been involved in research in the field of theoretical physical chemistry since the 1970s. His major research accomplishments have been in the area of reaction rate theory, including the development of theoretical methods for predicting rates of chemical reactions. This research contributed to the development of variational transition state theory into a practical, reliable method for including important quantum mechanical effects into calculations of rate constants for gas-phase chemical reactions. Dr. Garrett's research focus in the last several years has been to extend these methods to treat chemical reactions in condensed phase and interfacial systems. His current research interests include developing theoretical methods for including the effects of molecular environment (liquids, solids, and interfaces) on the rates of chemical reaction, advancing molecular theories to describe the kinetics of gas-to-particle nucleation, and understanding the molecular-level structure and energetics of liquid interfaces that will allow a detailed description of the transfer of molecules between phases. Before joining PNNL in 1989, Dr. Garrett co-founded Chemical Dynamics Corporation where he managed and conducted fundamental research. At PNNL, he was Technical Group Leader for Molecular Theory & Modeling from 1989 to 2002, and Associate Director for Molecular Interactions & Transformations from 2002 to 2005, before becoming Director of the Physical Sciences Division.

Jennifer Sinclair Curtis* is Distinguished Professor of Chemical Engineering and Associate Dean for Research in the College of Engineering at the University of Florida (UF). Professor Curtis received a B.S. in Chemical Engineering from Purdue University (1983) and a PhD in Chemical Engineering from Princeton University (1989). She has an internationally-recognized research program in the development and validation of numerical models for the prediction of particle flow phenomena. She is the co-author of over 100 publications and has given over 160 invited lectures at universities, companies, government laboratories and technical conferences. Professor Curtis is a recipient of a Fulbright Senior Research Scholar Award, a NSF Presidential Young Investigator Award, the American Society of Engineering Education's (ASEE) Chemical Engineering Lectureship Award, the Eminent Overseas Lectureship Award by the Institution of Engineers in Australia, the ASEE's Sharon Keillor Award for Women in Engineering, and the AIChE Fluidization Lectureship Award. She currently serves on the Governing Board of the Council for Chemical Research and as co-chair of the National Academies' Chemical Science Roundtable. She is also Associate Editor of the AIChE Journal and on the Editorial Advisory Board of Industrial & Engineering Chemistry Research, Powder

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Technology and Chemical Engineering Education. She has served on the National Academy of Engineering's (NAE) Committee on Engineering Education and has participated in two NAE Frontiers of Research Symposia (2003 and 2008). She is a Fellow of AAAS, AIChE and ASEE.

*Denotes member of the Chemical Sciences Roundtable