

Condensed Matter and Materials Research Committee

Committee

M. Lisa Manning

Co-Chair

M. LISA MANNING is the William R. Kenan, Jr. Professor of Physics at Syracuse University. Manning studies the mechanical properties of biological tissues and the failure of disordered materials. Manning's work to understand how the global properties of tissues impact cell migration and pattern formation provides insight into biological processes such as embryonic development, wound healing, and cancer. Manning works to understand the fundamental excitations in disordered solids generates better predictive models for flow and failure in materials from emulsions to glasses. Manning is an APS Fellow, and the recipient of the 2018 APS Maria Goeppert Mayer Award, the 2016 IUPAP Young Investigator Prize, a Simons Investigator award, a Sloan Fellowship, a Cottrell Scholar award, as well as several Syracuse University teaching awards. Manning was the Founding Director of the BioInspired Institute at Syracuse University from 2019-2023. Manning earned a Ph.D. in physics from the University of California, Santa Barbara.

Steven J. Zinkle

Co-Chair

STEVEN J. ZINKLE (NAE) is the Governor's Chair Professor for Nuclear Materials in the Nuclear Engineering and Materials Science and Engineering Departments at the University of Tennessee at Knoxville. Prior to joining the faculty at the University of Tennessee, Zinkle was chief scientist for Oak Ridge National Laboratory's (ORNL) Nuclear Science & Engineering Directorate and director of ORNL's materials science and technology division. Zinkle also served as director of ORNL's Metals and Ceramics Division, which merged into the materials sciences and engineering program. Zinkle's research interests include the investigation of deformation and fracture mechanisms in structural materials, physical metallurgy of structural materials, and the investigation of radiation effects in ceramics and metallic alloys for fusion and fission energy systems. Zinkle earned a Ph.D. in nuclear engineering from the University of Wisconsin at Madison.

Maria K. Chan

Member

MARIA K. CHAN is a scientist at the Center for Nanoscale Materials at Argonne National Lab. Chan's research focuses on nanomaterials and renewable energy materials, including solar cells and batteries and other energy storage, as well as photo- and electro-catalysts, thermal transport, and thermoelectrics. Chan also works on efficient computational approaches and for interfacing computational models with materials characterization (x-ray, electron, and scanning probe). Chan is a fellow of the University of Chicago Consortium for Advanced Science and Engineering and an associate editor at the ACS Journal Chemistry of Materials. Chan serves on a few advisory boards, including for the journal APL-Machine Learning. Chan received a Ph.D. in physics from the Massachusetts Institute of Technology.

Seth Fraden

Member

SETH FRADEN is a professor of physics at Brandeis University and co-chair of its nascent Engineering Program. Fraden previously directed the NSF-funded Brandeis Materials Research Science and Engineering Center from 2012–2024. Fraden's work spans soft-matter physics, nonlinear chemical dynamics, and bio-inspired materials. Fraden's group studied phase transitions in liquid crystal virus suspensions, pioneered microfluidic platforms for protein crystallization and studying chemical oscillators, developed DNA-origami that reveal design rules for self-assembly, and recently introduced control-approaches to steer active matter. After a 2024 sabbatical in the DeGrado lab at UCSF, Fraden's research switched focus to de novo protein design of large, functional assemblies. Fraden is a Fellow of the American Physical Society; professional service includes numerous National Science Foundation and Department of Energy review panels, and organization of Soft Matter conferences. Fraden earned a PhD in physics from Brandeis University.

Steve Granick

Member

STEVE GRANICK (NAS) is the Robert K. Barrett Professor of Polymer Science and Engineering at the University of Massachusetts. Granick also maintains affiliations with the Departments of Chemistry, Physics, Chemical Engineering, and Biomedical Engineering. Granick worked at the University of Illinois at Urbana-Champaign (1985–2014) and as director of the IBS Center for Soft and Living Matter, which is the Korean version of a Max-Planck Institute. Granick is a member of the U.S. National Academy of Sciences and American Academy of Arts and Sciences. Granick is the recipient of major awards such as the Paris-Sciences Medal, APS Polymer Physics Prize, and ACS Colloid and Surface Chemistry Prize. Granick earned a Ph.D. in chemistry from the University of Wisconsin-Madison.

Samson A. Jenekhe

Member

SAMSON A. JENEKHE (NAE) is the Frank and Julie Jungers Endowed Chair of Engineering and professor of chemical engineering and chemistry at the University of Washington. Prior to these positions, Jenekhe was principal research scientist at Honeywell Inc. and an assistant, associate, and full professor of Chemical Engineering at the University of Rochester. Jenekhe's scientific expertise includes organic/flexible electronics, polymer-based photovoltaics, organic light-emitting diodes (OLEDs) for displays and lighting, energy conversion and storage systems, molecular self-assembly and nanotechnology, and synthesis and properties of semiconducting polymers. Jenekhe was awarded the Charles M. A. Stine Award for Excellence in Materials Science and Engineering from the American Institute for Chemical Engineers, the Polymer Physics Prize from the American Physical Society and is a member of the Washington State Academy of Sciences. Jenekhe earned a Ph.D. in chemical engineering from the University of Minnesota.

Vidya Madhavan

Member

VIDYA MADHAVAN is the Donald Biggar Willett Professor of Engineering in Physics at the University of Illinois, Urbana Champaign. Madhavan's group investigates fundamental problems in quantum materials where interactions between the spin, charge, and structural degrees of freedom lead to emergent phenomena. Madhavan uses the tools of scanning tunneling microscopy (STM), scanning tunneling spectroscopy (STS), spin-polarized STM (SP-STM), ultrafast STM and molecular beam epitaxy (MBE) to unravel the mysteries of complex systems at the atomic scale. Madhavan is a member of several external scientific advisory boards of journals and institutes including Science, the Max Planck, Halle, and Würzburg-Dresden Center of Excellence, Germany. Madhavan was elected APS Fellow in 2015, Canadian Institute for Advanced Research Fellow in 2021, and elected to the American Academy of Arts and Sciences in 2023. Madhavan earned a PhD in condensed matter physics from Boston University.

Mark E. Nichols

Member

MARK E. NICHOLS is currently the senior technical leader for Coatings, Materials and Analysis at the Ford Motor Company with responsibility for all soft-materials research at Ford. Nichols is also the editor-in-chief of the Journal of Coatings Technology and Research, co-published by the American Coatings Association (ACA) and SpringerNature. Nichols' areas of research include the application and performance of soft materials, with a special emphasis on the service life prediction of coatings and polymers in different environments, optical properties of materials, corrosion, fracture mechanics of thin films, advanced experimental characterization methods, and the manufacturing processes used in Li-ion battery production. Nichols has received several internal and external awards including The Haren Gandhi Award (the highest technical award given to an individual at Ford), the Henry Ford Technology Award (highest technical award at Ford given to a team), and the Roon Award (best paper from the ACA). Nichols earned a PhD in materials science and engineering from the University of Michigan.

Monica Olvera de la Cruz

Member

MONICA OLVERA de la CRUZ (NAS) is the Lawyer Taylor Professor of Materials Science and Engineering; professor of chemistry; professor of chemical and biological engineering; professor of physics and astronomy; director of the Center for Computation and Theory of Soft Materials; and deputy-director of the Center for Bio-Inspired Energy Science at Northwestern University (NU). At NU, Olvera de la Cruz has led the development of models to describe the self-assembly of heterogeneous molecules including amphiphiles, copolymers and synthetic and biological polyelectrolytes, as well as the segregation and interface adsorption in multicomponent complex fluids. Olvera de la Cruz's research into soft and condensed matter physics have advanced scientific knowledge and opened new research fields of technological importance; including gel electrophoreses dynamics, self-organization of molecular electrolytes into bio-mimetic materials, self-assembly of heterogeneous molecules into complex nanostructures, interface adsorption and phase segregation dynamics and structure of multicomponent fluids. Olvera de la Cruz is a member of the American Philosophical Society, and the American Academy of Arts and Sciences. Major recent honors include the American Physical Society Polymer Physics Prize and the Department of Defense National Security Science and Engineering Faculty Fellowship;. Olvera de la Cruz serves on the US Department of Energy's Basic Energy Sciences Advisory Committee. Olvera de la Cruz received a Ph.D. in physics from Cambridge University, England.

Ramamoorthy Ramesh

Member

RAMAMOORTHY RAMESH (NAS/NAE) is a professor of physics and materials science and engineering at the University of California, Berkeley. Ramesh has made seminal contributions to the science and technology of complex correlated oxides using epitaxy as a pathway to create model systems. Ramesh has >600 publications and >100,000 citations, resulting in an h-index >150. Ramesh is a fellow of American Physical Society (APS), AAAS, and Materials Research Society (MRS); a Foreign member of the Royal Society of London, the Indian National Science Academy, the Indian National Academy of Engineering, and a Fellow of the American Academy for Arts and Sciences. Ramesh received awards such as the Humboldt Senior Scientist Prize, the MRS Turnbull lectureship prize, the 2018 IUPAP Magnetism Prize and Neel Medal and the Europhysics Prize in 2022 among others. Previously Ramesh served as deputy director for science and technology at Oak Ridge National Laboratory (ORNL) overseeing R&D programs in materials and physical sciences among others; prior to that Ramesh was a founding director of the U.S. DOE SunShot Initiative. Ramesh earned a PhD in materials science from the University of California, Berkeley.

Michael Rubinstein

Member

MICHAEL RUBINSTEIN is the Aleksandar S. Vesic Distinguished Professor at Duke University. Rubinstein's research interests lie in soft condensed matter physics with an emphasis on polymer physics. Rubinstein focuses on theories of polymer entanglements, dynamics of reversible networks, and models of charged polymers. Rubinstein's recent interests also include applications of polymer physics to biological systems. Rubinstein's previous experiences include work at Bell Labs and serving as past chair of the "Soft Matter" publication of the Royal Society of Chemistry. Rubinstein received the Soft Matter and Biophysical Chemistry Award of the Royal Society of Chemistry and the APS Polymer Physics Prize. Rubinstein is an elected fellow of APS. Rubinstein earned a Ph.D. from Harvard University.

Subhash C. Singhal

Member

SUBASH C. SINGHAL is a former Battelle Fellow and Director of Pacific Northwest National Laboratory, USA. Singhal most recent focus was senior technical, managerial, and commercialization leadership to the laboratory's extensive fuel cell and clean energy programs. Prior to this, worked in the field of advanced materials and energy systems. Singhal serves on several advisory boards such as the Department of Materials Science and Engineering at the University of Florida. Singhal is also a fellow of several professional societies, such as the American Ceramic Society and the Electrochemical Society. Singhal received a Ph.D. in materials science and engineering from the University of Pennsylvania.

Victor R. Vasquez

Member

VICTOR R. VASQUEZ is a professor and chair of the Chemical and Materials Engineering Department. Vasquez's research focuses on atomistic modeling methods to develop and understand new materials for extreme applications, such as development of metal hexaborides, which are ceramics with unique mechanical and electronic properties; and development of reverse micellar systems for synthesis of nano-particles. Vasquez is interested in the potential and opportunities that cutting edge modeling provide for development of new engineering technologies. Vasquez is an active participant in the organization of sessions in annual meetings for the American Institute of Chemical Engineers (AIChE), Materials Research Society (MRS), and the Society of Hispanic Professional Engineers (SHPE). Vasquez also works on mentoring of both graduate and undergraduate students from diverse backgrounds, and I have great interest in undergraduate STEM education for diverse student groups, in particular Hispanics. Vasquez received a Ph.D. in chemical engineering from the University of Nevada, Reno.