



**ChemE**



**Energy, Education and Excellence: A Symposium honoring Robert C.  
Speaker Biographies**

**OSMAN BASARAN**

Osman Basaran is the Gedge Professor of Chemical Engineering at Purdue University. He is the founding/academic director of Purdue Process Safety and Assurance Center (P2SAC) and Purdue Multiphase Flow Center (PMULFLOW). Basaran received his BS in ChE from MIT in 1978 and his PhD in ChE from the University of Minnesota in 1984. After spending four years at Air Products, Basaran joined Oak Ridge National Laboratory (ORNL). While at ORNL, he was an adjunct faculty at the University of Tennessee. Since 1995, Basaran has been on the faculty of Purdue where he has graduated 27 PhD students. He currently leads a group studying problems as diverse as drop/bubble breakup and coalescence, inkjet printing, electrohydrodynamics, thin film dynamics, surfactants in free surface flows, complex fluids, and safety and flow assurance. Over the last two decades, Basaran has received a number of awards including the R&D Accomplishment Award from MMES (1994), becoming a fellow of the APS/DFD (2008), winning the Purdue College of Engineering Research Excellence Award (2010), and being part of the team that won the Purdue College of Engineering Team Award (2010). Basaran is a member of the Consulting Board of Editors of the AIChE Journal. Aside from being active in research and teaching, Basaran has served over the years as a consultant for dozens of corporations. Over the past decade, Basaran has also acted in a number of capacities with APS and AIP including a term as the Chair of APS's National Membership Committee.



**ANGELA BELCHER**

Angela Belcher is a biological and materials engineer with expertise in the fields of biomaterials, biomolecular materials, organic-inorganic interfaces and solid-state chemistry and devices. Her primary research focus is evolving new materials for energy, electronics, the environment, and medicine. She received her B.S. in Creative Studies from The University of California, Santa Barbara. She earned a Ph.D. in inorganic chemistry at UCSB. Following with her postdoctoral research in electrical engineering at UCSB. She now holds the James Mason Crafts Professor of Biological Engineering and Materials Engineering at MIT. She is faculty in the Department of Biological Engineering, Materials Science and Engineering and the Koch Institute of Integrative Cancer Research. She teaches undergraduate subjects in material sciences and engineering and biological engineering. In 2002, she founded the company Cambrios Technologies, Inc.,



and in 2007 she founded Siluria Technologies, Inc. Some recent awards include the Lemelson-MIT Prize for her Inventions, Eni Prize for Renewable and Non-Conventional Energy, in 2009 Rolling Stone Magazine listed her as one of the top 100 people changing the country. In 2007, Time Magazine named her a “Hero”- for her research related to Climate Change. She received the Four Star General Recognition Award (US Army) for significant contribution to army transformation. In 2000, she was awarded the Presidential Early Career Award in Science and Engineering (PECASE). She was named Research Leader of the Year by Scientific American, and is a MacArthur Fellow, a Packard Fellow, an Alfred P. Sloan Fellow, a Bose Fellow, a member of American Academy of Arts and Sciences, a member of the National Academy of Inventors, a member of the National Academy of Engineering and a member of the National Academy of Sciences.

### **ANTONY N. BERIS**

Antony Beris holds a Ph.D. in Chemical Engineering from Massachusetts Institute of Technology (1985). He is currently the Arthur B. Metzner professor of Chemical and Biomolecular Engineering and he is also an affiliate faculty member of the Department of Biomedical Engineering at the University of Delaware. Beris has also served on the board of directors of the Center of Composite Materials.



Beris’s research is concerned with the modeling and simulation of the interplay of flow processes and nonequilibrium thermodynamics in systems with a complex internal microstructure, where multiple length and time scales are important. Typical examples include the study of polymer and surfactant-induced turbulent drag reduction, blood flow circulation in the human arterial system, thixotropy effects in aggregating concentrated suspensions, stress-induced migration and crystallization in polymers, free-surface flows in polymer processing, etc.

He has published a seminal research monograph on “Thermodynamics of Flowing Systems” (together with B.J. Edwards) and more than 150 refereed articles. Beris is a fellow of AAAS, of APS (Division of Fluid Dynamics) and of the Society of Rheology and has received the 2015 Willem Prins prize, awarded by the Delft Association of Polymer Technology from Delft UT in the Netherlands.

### **VLADIMIR BULOVIĆ**

Vladimir Bulović is a Professor of Electrical Engineering at the Massachusetts Institute of Technology, holding the Fariborz Maseeh Chair in Emerging Technology. He directs the Organic and Nanostructured Electronics Laboratory, co-leads the MIT-Eni Solar Frontiers Center, leads the Tata GridEdge program, and is the Founding Director of MIT.nano, MIT's nano-fabrication, nano-characterization, and prototyping facility.



Bulovic is an author of over 250 research articles (cited over 60,000 times and recognized as the top 1% of the most highly cited in the Web of Science). He is a fellow of the National

Academy of Inventors and an inventor of over 120 U.S. patents in areas of light emitting diodes, lasers, photovoltaics, photodetectors, chemical sensors, programmable memories, and micro-electro machines, majority of which have been licensed and utilized by both start-up and multinational companies.

The start-up companies Bulović co-founded jointly employ over 350 people, and include Ubiquitous Energy, Inc., developing nanostructured solar technologies, Kateeva, Inc., focused on development of printed electronics, and QD Vision, Inc. (acquired in 2016) that produced quantum dot optoelectronic components. Products of these companies have been used by millions.

Bulović was the first Associate Dean for Innovation of the School of Engineering and the Inaugural co-Director of MIT's Innovation Initiative, which he co-led from 2013 to 2018. For his passion for teaching Bulović has been recognized with the MacVicar Fellowship, MIT's highest teaching honor. He completed his Electrical Engineering B.S.E. and Ph.D. degrees at Princeton University.

## **JACOPO BUONGIORNO**

Jacopo Buongiorno is the TEPCO Professor of Nuclear Science and Engineering at the Massachusetts Institute of Technology (MIT), the Director of the Center for Advanced Nuclear Energy Systems (CANES), and the Director of Science and Technology of the MIT Nuclear Reactor Laboratory. Buongiorno has published over 100 journal articles in the areas of reactor safety and design, two-phase flow and heat transfer, and nanofluid technology. For his research work and teaching he won several awards, among which recently the 2022 ANS Presidential Citation. Buongiorno is a consultant for the nuclear industry in the area of reactor thermal-hydraulics, and a member of the Accrediting Board of the National Academy of Nuclear Training. He is also a Fellow of the American Nuclear Society, a Fellow of the Nuclear Reactor Thermal Hydraulics (NURETH) conference, a member of the ASME, past member of the Naval Studies Board (2017-2019), and a participant in the Defense Science Study Group (2014-2015).



## **JOHN DEUTCH**

John Deutch is an Institute Professor Emeritus at the Massachusetts Institute of Technology. Deutch has been a member of the MIT faculty since 1970 and has served as Chairman of the Department of Chemistry, Dean of Science, and Provost. Deutch has published over 160 technical publications in physical chemistry, as well as numerous publications on technology, energy, international security, and public policy issues.



Deutch served as Director of Central Intelligence from May 1995-December 1996. From 1994-1995, he served as Deputy Secretary of Defense and served as Undersecretary of Defense for Acquisition and Technology from 1993-1994. Deutch has also served as Director of Energy Research (1977-1979), Acting

Assistant Secretary for Energy Technology (1979), and Undersecretary (1979-80) in the United States Department of Energy.

In addition, Deutch has served on the President's Nuclear Safety Oversight Committee (1980-81); the President's Commission on Strategic Forces (1983); the White House Science Council (1985-89); the President's Foreign Intelligence Advisory Board (1990-93); the President's Commission on Aviation Safety and Security (1996); the President's Commission on Reducing and Protecting Government Secrecy (1996-1997); and as Chairman of the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction (1998-99).

Deutch was a member of the President's Committee of Advisors on Science and Technology (1997-2001) and a member of the National Petroleum Council (2008-2018). He received the Aspen Strategy Group Leadership Award in 2004 and was the Phi Beta Kappa "Orator" at Harvard University, 2005. Deutch is a member of the National Petroleum Council and the American Philosophical Society. In 2009 Deutch received the MIT Gordon Y Billard award: "... for special service of outstanding merit performed for the Institute." He was a member of the Secretary of Energy Advisory Board (2012 – 2017) and chair (2014-2017).

## **JEFFREY GIACOMIN**

Dr. Giacomini is a retired Professor of Chemical Engineering, Mechanical and Materials Engineering and Physics, Engineering Physics and Astronomy at Queen's University at Kingston in Canada where he holds the titles Tier 1 Canada Research Chair in Physics of Fluids, and Adjunct Professor at the University of Nevada, Reno, USA.

Born in Kingston, Giacomini graduated high school on the island of Montreal. He earned his bachelor's and master's degrees in chemical engineering from Queen's University in Kingston, before joining the Research Division at DuPont Canada. Giacomini then earned a PhD in Chemical Engineering from McGill University under Professor John Dealy, his thesis titled "A Sliding Plate Melt Rheometer Incorporating a Shear Stress Transducer." He joined the Mechanical Engineering faculty at Texas A&M University. He has been a Professor of Mechanical Engineering at the University of Wisconsin, where for twenty years he chaired its Rheology Research Center. Giacomini has held visiting professorships at McGill University, the University of Sherbrooke, the Swiss Federal Institute of Technology, the Paris School of Mines, the National University of Singapore, Chung Yuan University near Taipei, Yunlin University, in southern Taiwan, and Shandong University in mainland China. Giacomini is the Past-President of the Canadian Society of Rheology, and a former President of The Society of Rheology. Giacomini serves as the sole Editor-in-Chief of Physics of Fluids.



## MICAH GREEN

Micah J. Green is a native of West Texas. He studied chemical engineering at Texas Tech (undergraduate) before continuing to his Ph.D. in chemical engineering at MIT under the supervision of Bob Armstrong and Bob Brown. Green's Ph.D. studies involved the study of rodlike liquid crystals, their phase transitions, and their rheology. He currently serves as Professor and Associate Department Head in the Artie McFerrin Department of Chemical Engineering at Texas A&M University, where he leads a research group that focuses on nanomaterial and composite processing. Green has received the NSF CAREER Award, the Young Investigator Award from the Air Force Office of Scientific Research, and the DuPont Young Faculty Award for his work in these areas.



## PAULA HAMMOND

Professor Paula T. Hammond is an Institute Professor at the Massachusetts Institute of Technology, Head of the Department of Chemical Engineering, and a member of MIT's Koch Institute for Integrative Cancer Research. Hammond's research in nanomedicine encompasses the development of new biomaterials to enable drug delivery from surfaces with spatio-temporal control. She investigates novel responsive polymer architectures for targeted nanoparticle drug and gene delivery and is known for her work on nanoparticles to target cancer, and thin film coatings to release factors that regenerate bone and assist in wound healing. More recently, she has worked on nanomaterials systems to treat osteoarthritis and staged release systems for the delivery of vaccines. Hammond was elected into the National Academy of Science in 2019, the National Academy of Engineering in 2017, the National Academy of Medicine in 2016, and the 2013 Class of the American Academy of Arts and Sciences. She has also recently received the American Institute of Chemical Engineers (AIChE) Margaret H. Rousseau Pioneer Award for Lifetime Achievement by a Woman Chemical Engineer in 2019 and gave the Materials Research Society (MRS) David Turnbull Lectureship, 2019. Hammond has published over 330 papers, and over 20 patent applications. She is the co-founder and member of the Scientific Advisory Board of LayerBio, Inc., a member of the Scientific Advisory Board of Moderna Therapeutics and a member of the Board of Alector, Inc. In 2021, Hammond was selected to become a member of the President's Council of Advisors on Science and Technology (PCAST).



In terms of educational background, Hammond is from Detroit, Michigan, and received her B.S. in Chemical Engineering from MIT, then worked for two years in industry, moved to Atlanta to get an M.S. in Chemical Engineering at Georgia Tech, before returning to MIT for her PhD. She held the Ford Foundation Dissertation Fellowship, and on completing her PhD, was an NSF Postdoctoral Fellow at the Harvard University Chemistry Department before returning to MIT as a faculty member.

## ALAN HATTON

T. Alan Hatton is the Ralph Landau Professor and Director of the David H. Koch School of Chemical Engineering Practice at the Massachusetts Institute of Technology. He obtained his BSc and MSc degrees in Chemical Engineering at the University of Natal, Durban, South Africa, and worked at the Council for Scientific and Industrial Research in Pretoria for three years before attending the University of Wisconsin, Madison, to obtain his PhD.



Hatton is currently Faculty Lead on Carbon Management in the Future Energy Systems Center of the MIT Energy Initiative. His research interests encompass self-assembly of surfactants and block copolymers, synthesis and functionalization of magnetic nanoparticles, and the exploitation of stimuli-responsive materials for chemical, environmental, and pharmaceutical processing applications. His group has pioneered a number of electrochemically mediated operations for water treatment and resource recovery, as well as for carbon dioxide removal from point sources, ambient air, and ocean waters.

The Hatton laboratory has spun out two start-up companies: Verdox (2019) is developing electrochemical swing processes for CO<sub>2</sub> capture from point sources and ambient air, for which it was recently awarded a \$1 million Elon Musk XPrize, while Mantel Capture (2022) is focused on exploiting molten salts for capture of CO<sub>2</sub> at the high temperatures at which it is produced in many chemical industries.

## HOWARD J. HERZOG

Howard J. Herzog is a senior research engineer in the MIT Energy Initiative (MITEI). He received his undergraduate and graduate education in chemical engineering at MIT. Herzog has industrial experience with Eastman Kodak, Stone & Webster, Aspen Technology, and Spectra Physics. Since 1989, he has been on the MIT research staff, where he works on sponsored research involving energy and the environment, with an emphasis on greenhouse gas mitigation technologies. He was a Coordinating Lead Author for the IPCC Special Report on Carbon Dioxide Capture and Storage (released September 2005), a co-author on the MIT Future of Coal Study (released March 2007), and a US delegate to the Carbon Sequestration Leadership Forum's Technical Group (June 2003-September 2007). Herzog was awarded the 2010 Greenman Award by the IEAGHG "in recognition of contributions made to the development of greenhouse gas control technologies". In 2018, he authored a book entitled Carbon Capture for the MIT Press Essential Knowledge Series.



## **SUSAN HOCKFIELD**

Susan Hockfield served from 2004 to 2012 as the 16th president of the Massachusetts Institute of Technology, the first life scientist and first woman in that role. She is now President Emerita, professor of neuroscience, and a member of the Koch Institute for Integrative Cancer Research. As president, Hockfield strengthened the foundations of MIT's finances and campus planning while advancing Institute-wide programs in sustainable energy and the convergence of the life, physical, and engineering sciences.



In 2006 under Hockfield's leadership, MIT launched a major energy initiative (MITEI), capitalizing on the Institute's deep strength in science, engineering, architecture, management, and economics to pioneer the leading edge of energy and environmental research, from visionary policy recommendations to technological breakthroughs.

In addition, Hockfield helped shape national policy for energy and next-generation manufacturing, appointed by President Obama in 2011 to co-chair the steering committee of the Advanced Manufacturing Partnership and by serving as a member of a Congressional Commission evaluating the Department of Energy laboratories in 2015.

Hockfield has published extensively, in scientific and public media, and is the recipient of the 2020 Science Communication Award from the American Institute of Physics for her 2019 book, *The Age of Living Machines*. She is the past president and chairman of the American Association for the Advancement of Science. She is a life member of the MIT Corporation.

## **SAFA JAMALI**

Safa Jamali is an Associate Professor of Mechanical and Industrial Engineering at Northeastern University, with a courtesy appointment in Chemical Engineering. Jamali received his PhD from Case Western Reserve University's Macromolecular Science department, followed by two years of Postdoc training under Bob's mentorship, and then joined Northeastern University in 2017. Jamali's research group is focused on developing and using a series of data driven and computational methods for the physics and rheology of complex materials. These include biophysics of cell suspensions with a focus on blood dynamics, science-based data-driven methods and machine-learning platforms for rheological applications, and physics of colloidal systems amongst other topics.



## **PAUL JOSKOW**

Paul Joskow is the Elizabeth and James Killian Professor of Economics at the Massachusetts Institute of Technology (MIT) and President emeritus of the Alfred P. Sloan Foundation.

Joskow has been on the MIT faculty since 1972, where he was the head of the MIT Department of Economics from 1994 to 1998 and director of the MIT Center for Energy and Environmental Policy Research from 1999 to 2007. He became president of the Sloan Foundation in 2008 and returned to MIT in 2018. At MIT his teaching and research areas include industrial organization, energy and environmental economics, competition policy, and government regulation of industry.



Joskow has authored or co-authored over 160 papers and co-authored or edited eight books in these fields. He is a past president of the International Society for New Institutional Economics, a distinguished fellow of the Industrial Organization Society, a distinguished fellow of the American Economic Association, a fellow of the Econometric Society, a fellow of the American Academy of Arts and Sciences, a fellow of the Econometric Society, and a member of the Council on Foreign Relations. Joskow has served on the boards of the New England Electric System, National Grid PLC, TC Energy, State Farm Indemnity, Exelon Corporation, Putnam Mutual Funds, and the Whitehead Institute for Biomedical Research.

## **SAAD KHAN**

Saad Khan is currently the INVISTA Professor in the Department of Chemical & Biomolecular Engineering at North Carolina State University. He obtained his PhD in Chemical Engineering from MIT in 1985, working with Prof. Robert Armstrong in the area of foams, a topic that led him to buy as many brands of shaving foams as he could find off the shelves of supermarkets in Cambridge! Nevertheless, the work produced some nice and seminal papers that he is quite proud of. Khan worked as a postdoctoral research associate at AT&T Bell Laboratories, prior to joining NC State. He has varied research interests ranging from developing functional materials such as aerogels and matrices for improved food security to understanding rheological behavior of soft solids and gels. In the latter context, he has focused on several different areas including enzymatic modification of water-soluble polymer and gels, photo crosslinked polymers, self-assembled nanoparticulate silica and nanodiamond gels, associative polymer interactions with surfactants and cyclodextrins, leading to applications in coatings, personal care, and energy storage device, to name a few. Khan has supervised over 60 PhD students and several postdocs, whose work has resulted in over 260 publications and 17 patents. He is a Fellow of the Society of Rheology.



## **DHARIK MALLAPRAGADA**

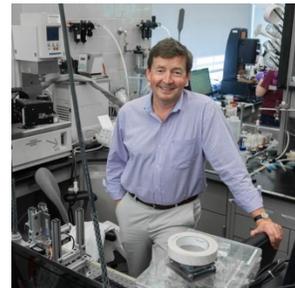
Dharik S. Mallapragada is a Principal Research Scientist at the MIT Energy Initiative (MITEI), where he leads the Sustainable Energy Transitions Group. Mallapragada's research focuses on planning and operating resilient, low-carbon energy systems as well as conceptualization, design and integration of emerging energy technologies. At MIT, he has pursued research in these topics while securing funding from government, industry and philanthropic sources and establishing collaboration with multiple principal investigators across MIT and other institutions. Recently, he led the systems modeling effort for the Future of Energy Storage study, an interdisciplinary MIT project exploring the role for storage in future low-carbon grids.



Prior to MIT, Mallapragada spent nearly five years in the energy industry working on a range of sustainability-focused research topics. He recently served as a member of the Massachusetts Commission on Clean Heat, and serves on the advisory committee for the Open Energy Outlook project, a multi-institution effort to create open-source energy systems models and data sets. He also co-leads systems thrust activities at the Center for Decarbonizing Chemical Manufacturing using Sustainable electrification (DC-MUSE). Mallapragada holds a M.S. and Ph.D. in Chemical Engineering from Purdue University and a B.Tech. in Chemical Engineering from the Indian Institute of Technology, Madras, India. Mallapragada will be joining Department of Chemical and Biomolecular Engineering at New York University Tandon School of Engineering in Jan 2024.

## **GARETH MCKINLEY**

Gareth H. McKinley FRS is the School of Engineering Professor of Teaching Innovation and former Associate Head and Interim Head of the Department of Mechanical Engineering at MIT. His research interests include extensional rheometry, microfluidic rheometry and non-Newtonian fluid dynamics. He is a co-founder of Cambridge Polymer Group and a member of the Scientific Advisory Boards of Rheosense Inc. and ActNano Inc. He is the author of over 350 technical publications and has won the Publication Award of the Society of Rheology twice (2007; 2022) as well as the 2021 Walters Award from J. Non-Newtonian Fluid Mechanics. He was awarded the Bingham Medal of The Society of Rheology in 2013, the Gold Medal from the British Society of Rheology in 2014 and the G.I.Taylor Medal from the Society for Engineering Science (SES) in 2022. In 2019 he was elected to the National Academy of Engineering and also inducted as a Fellow of the Royal Society of London. In 2023 he became a Corresponding Member of the Australian Academy of Science (AAS).



## **ERNEST MONIZ**

Ernest J. Moniz was the thirteenth US Secretary of Energy, advancing clean energy technology innovation, nuclear security, and cutting-edge scientific research capabilities. He negotiated the Iran nuclear agreement alongside the Secretary of State.



Moniz joined the Massachusetts Institute of Technology faculty in 1973, was founding Director of the MIT Energy Initiative and is the Cecil and Ida Green Professor of Physics and Engineering Systems emeritus. He is CEO of the Nuclear Threat Initiative and of the Energy Futures Initiative and received the inaugural American Academy of Arts and Sciences Award for Excellence in Public Policy and Public Affairs.

## **ELSA OLIVETTI**

Elsa Olivetti is the Jerry McAfee (1940) Professor in Engineering in the Department of Materials Science and Engineering (DMSE) and co-director of the MIT Climate and Sustainability Consortium at the Massachusetts Institute of Technology. Olivetti's research focuses on reducing the significant burden of materials production and consumption through increased use of recycled and waste materials; informing the early stage design of new materials for effective scale up; and understanding the implications of policy, new technology development, and manufacturing processes on materials supply chains.



Olivetti received her BS degree in engineering science from the University of Virginia in 2000 and her PhD in materials science engineering from MIT in 2007.

## **KRISTALA PRATHER**

Kristala L.J. Prather is the Arthur D. Little Professor in the Department of Chemical Engineering at MIT. She received an S.B. degree from MIT in 1994 and Ph.D. from the University of California, Berkeley (1999), and worked 4 years in BioProcess Research and Development at the Merck Research Labs prior to joining the faculty of MIT. Prather's research interests are centered on the design and assembly of recombinant microorganisms for the production of small molecules, with additional efforts in novel bioprocess design approaches.

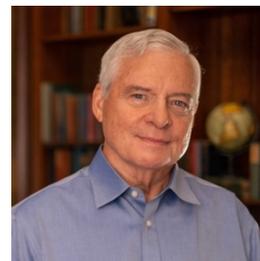


Prather is the recipient of an Office of Naval Research Young Investigator Award (2005), a Technology Review "TR35" Young Innovator Award (2007), a National Science Foundation CAREER Award (2010), the Biochemical Engineering Journal Young Investigator Award (2011), the Charles Thom Award of the Society for Industrial Microbiology and Biotechnology (2017), and the Andreas Acrivos Award for Professional Progress in Chemical Engineering of the American Institute of Chemical Engineers (AIChE, 2021). Additional honors include selection as a Fellow of the Radcliffe Institute for Advanced Study (2014-2015),

the American Association for the Advancement of Science (AAAS; 2018), the American Institute for Medical and Biological Engineering (AIMBE; 2020), and AIChE (2020).

### **RICHARD SCHMALENSEE**

Richard Schmalensee is Professor of Economics, Emeritus and Howard W. Johnson Professor of Management, Emeritus at MIT. He was Director of the MIT Center for Energy and Environmental Policy Research for 12 years. Schmalensee served as the Dean of the MIT Sloan School of Management from 1998 through 2007 and was a member of the President's Council of Economic Advisers with primary responsibility for energy and environmental policy from 1989 through 1991.



With Paul Joskow, Schmalensee wrote *Markets for Power*, an important early stimulus to electricity sector restructuring. More recently he was co-chair of the MIT Energy Initiative study *The Future of the Electric Grid* and chair of *The Future of Solar Energy*, and he was a senior participant in *The Future of Energy Storage*. Schmalensee is a Fellow of the Econometric Society, a Member of the American Academy of Arts and Sciences, a Member of the Executive Committee of the National Bureau of Economic Research, and Chairman, Emeritus of the Board of Resources for the Future.

### **NINA SHAPLEY**

Nina Shapley earned her Ph.D. degree in Chemical Engineering from MIT in 2000, working with advisors Robert C. Armstrong and Robert A. Brown to measure particle velocity fluctuations in concentrated suspension flows. Her postdoctoral research at University of California, Davis, involved MRI measurements of emulsion flows and mixing. Shapley began her faculty career as an Assistant Professor at Columbia University in the Department of Chemical Engineering. Currently, she is an Associate Professor in the Department of Chemical and Biochemical Engineering at Rutgers University, as well as the departmental Undergraduate Program Director. Shapley's current research focuses on advancing fundamental discoveries regarding particulate flows and particle technology toward environmental and health applications. Ongoing projects include developing sustainable particulate materials for water purification and high performance natural pigments, understanding the flow properties of complex fluids involved in personal care products, and improving cake filtration of catalyst materials.



## **ROBERT STONER**

Robert Stoner is the interim director of the MIT Energy Initiative (MITEI), and founding director of the MIT Tata Center for Technology and Design. A physicist, Stoner is the inventor of numerous computational and ultrafast optical measurement techniques, and has led successful technology firms in the semiconductor, IT, and optics industries. Before coming to MIT in 2009, he lived and worked in Africa and India while serving in a variety of senior roles within the Clinton Foundation, including as the CEO of the Clinton Development Initiative, and director of the Clinton Climate Initiative for Africa. Stoner's present research at MIT focuses on energy technology and policy in the context of energy systems and business models in the developing world.



## **YOGESH SURENDRANATH**

Yogesh (Yogi) Surendranath is Professor of Chemistry & Chemical Engineering at the Massachusetts Institute of Technology. He holds dual bachelor's degrees in chemistry and physics from the University of Virginia and a PhD in inorganic chemistry from MIT, obtained under the direction of Professor Daniel Nocera. After receiving his PhD, Surendranath undertook postdoctoral studies as a Miller Research Fellow at UC Berkeley, under the direction of Professor Paul Alivisatos. In 2013, he launched his independent research program at MIT. The Surendranath group aims to address frontier challenges in energy conversion and sustainability by controlling interfacial reactivity at the molecular level.



## **KRIPA VARANASI**

Kripa K. Varanasi is a Professor of Mechanical Engineering at MIT. He received his B.Tech from IIT Madras, India and his SM (ME and EECS) and Ph.D from MIT. Prior to joining MIT as a faculty member, Varanasi was a lead researcher and project leader at the GE Global Research Center. At GE he received many awards for his work including Best Patent, Best Technology Project and Leadership Award. At MIT, the focus of his work is in understanding the physico-chemical phenomena at interfaces and developing novel materials, devices, and products that can dramatically enhance performance in energy, water, agriculture, transportation, medical, and consumer devices.



Varanasi is passionate about entrepreneurship and translating technologies from lab to market. He has co-founded multiple companies including LiquiGlide, Dropwise, Infinite Cooling, and Everon24. Time and Forbes Magazines have named LiquiGlide to their "Best Inventions of the Year". His Infinite Cooling project has won first prize at DOE's National Cleantech University Prize, first prize Rice Business Plan Competition,

first prize Harvard Business School Energy & Environment Start-up, first prize at MIT-\$100K, first prize at MassChallenge.

Varanasi has received numerous awards for his work NSF Career Award, DARPA Young Faculty Award, SME Outstanding Young Manufacturing Engineer Award, ASME Bergles-Rohsenow Heat Transfer Award, Boston Business Journal's 40 under 40. ASME Gustus L. Larson Memorial Award for outstanding achievements in Mechanical Engineering, APS Milton van Dyke award, and MIT Graduate Student Council's Frank E. Perkins Award for Excellence in Graduate Advising.

## **MARIA ZUBER**

Maria Zuber is Vice President for Research and E. A. Griswold Professor of Geophysics at MIT, where she is responsible for research administration and policy. Zuber oversees MIT Lincoln Laboratory and more than a dozen interdisciplinary research laboratories and centers, including the Koch Institute for Integrative Cancer Research, the MIT Energy and Environmental Solutions Initiatives, the Plasma Science and Fusion Center, and the Research Laboratory of Electronics. She also oversees MIT's Climate Action Plan for the Decade.



Zuber's research bridges planetary geophysics and the technology of space-based laser and radio systems. Since 1990, she has held leadership roles associated with a dozen scientific experiments or instrumentation on ten NASA missions, most notably serving as Principal Investigator of the Gravity Recovery and Interior Laboratory (GRAIL) mission.

Zuber holds a B.A. from the University of Pennsylvania and an Sc.M. and Ph.D. from Brown. She is a member of the National Academy of Sciences and the American Philosophical Society, and is a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Science, and the American Geophysical Union.

Vice President Zuber is the first woman to lead a science department at MIT and the first to lead a NASA planetary mission. In 2013, President Obama appointed her to the National Science Board, and in 2018 she was reappointed by President Trump. Zuber served as Board chair from 2016-2018. In 2021, President Biden named Zuber as co-chair of the President's Council of Advisors on Science and Technology (PCAST).