Assessment of the National Institute of Standards and Technology (NIST) Material Measurement Laboratory

Committee

Elsa Reichmanis

Chair

ELSA REICHMANIS (NAE) is Professor and Carl Robert Anderson Chair in Chemical Engineering in the Department of Chemical and Biomolecular Engineering at Lehigh University. Prior to joining Lehigh, she was Professor and Pete Silas Chair in Chemical Engineering in the School of Chemical and Biomolecular Engineering at the Georgia Institute of Technology. She started her independent career at Bell Labs where she was Bell Labs Fellow and Director of the Materials Research Department. She received her Ph.D. and B.S. degrees in chemistry from Syracuse University. Her research, at the interface of chemical engineering, chemistry, materials science, optics, and electronics, spans from fundamental concepts to technology development and implementation, with a particular focus on polymeric and nanostructured materials for advanced technologies. Dr. Reichmanis was elected to the National Academy of Engineering in 1995 and has participated in several National Research Council (NRC) activities. She was elected Fellow of the National Academy of Inventors in 2021; was an elected member of the Bureau of the International Union for Pure and Applied Chemistry (IUPAC); has been active in the American Chemical Society throughout her career, having served as 2003 president of the Society; and is currently a Member of the Board of the American Institute of Chemical Engineers (AIChE). She is the recipient of several awards, including the 2022 John M. Prausnitz AIChE Institute Lecture Award, 2018 AIChE Margaret H. Rousseau Pioneer Award for Lifetime Achievement by a Woman Chemical Engineer, ACS Award in the Chemistry of Materials (2018), ACS Award in Applied Polymer Science (1999), the IUPAC Distinguished Woman in Chemistry and Chemical Engineering Award (2013), the ASM Engineering Materials Achievement Award (1996), and the Society of Chemical Industry’s Perkin Medal (2001). She is a Fellow of AAAS, ACS, AIChE, Materials Research Society, and the Royal Society of Chemistry. In other service, she is an Executive Editor of the ACS Journal, Chemistry of Materials.

Robert A. Bever

Member

ROBERT A. BEVER is serving as a Senior Scientist and Forensic Laboratory Director at Bode Technology. He has thirty-four years of experience in directing research and operations for three accredited Forensic / Parentage Testing DNA laboratories. He has fifteen years of experience directing and managing government research contracts associated with the development and optimization of advanced molecular techniques for detecting and analyzing human and bacterial DNA. His current research interests are developing and implementing Next Generation Sequencing for human identification and for Forensic Investigative Genetic Genealogy. He has provided expert testimony in over 160 civil and criminal trials and has served as a subject matter expert to the DoD and intelligence community in the area of bio-defense and forensic science. Dr. Bever is a certified Forensic Laboratory Director for the New York State Department of Health and is a member of the American Academy of Forensic Science and the American Association of Blood Banks, and was a member of the American Society of Microbiology. He earned his Ph.D. in Microbiology from the University of Maryland and performed postdoctoral research in molecular pathogenesis at the Oregon Health Science University and the University of Rochester School of Medicine

August W. Bosse

Member

AUGUST W. BOSSE is currently the Senior Principal Scientist, Hydrocarbon and Materials Science, at ExxonMobil Technology and Engineering Company. While at ExxonMobil, Dr. Bosse has had a range of positions, including New Hydrocarbon Products Program Leader, Section Head of Polymer and Hydrocarbon Science, and various research team lead positions. Before coming to ExxonMobil, he was a postdoc, a National Research Council Postdoctoral Research Associate, and a member of the permanent staff in the Polymer Division at the National Institute of Standards and Technology (NIST). Dr. Bosse’s research has focused on the theory and simulation of block copolymer phase behavior to enable critical dimension metrology, polyolefin crystallization, polymer blends, polymer interfaces, composites, and random copolymers. His primary research interests are rooted in statistical field theories of heterogeneous systems, especially soft materials. Dr. Bosse received a B.S. in physics from the University of California, Davis, and a M.A. and Ph.D. in physics from the University of California, Santa Barbara.

Kenneth M. Calderone

Member

KENNETH M CALDERONE is an advanced workflow specialist supporting confocal microscopy applications with Leica Microsystems. He is responsible for teaching and training research scientists on the appropriate applications of advanced microscopy, with a focus on laser scanning systems. Prior to his career at Leica, he gained 12 years of experience in microscopy as a research technician at the University of Michigan. At Michigan, he became a research laboratory technician lead by developing microscopy techniques and training scientists on proper microscopy protocols. During his career at Michigan, he focused on developing techniques to stain thick biological samples and image them using multiphoton microscopy. He also gained extensive experience in staining biological samples using immunofluorescent and chemical techniques, developing widefield microscopy protocols, and 2D and 3D image data analysis. He graduated from Western Michigan University with a BS in biomedical sciences and a minor in chemistry.

Iuliana Cernatescu

Member

IULIANA CERNATESCU is the Sr. Technical Fellow of Material Characterization and Applications for Pratt & Whitney. In her role, she provides technical leadership for Materials Characterization field at Pratt & Whitney, including identification, development, and championing of characterization technologies that enables agile engineering development, increased efficiencies, and inspection/measurement capabilities at each stage of the jet engine life cycle. Further, Dr. Cernatescu identifies and develops external partnerships to enhance P&W Material Characterization and Inspection technologies that align with P&W business-critical strategic and tactical goals. She serves as the P&W Materials Characterization expert internally to P&W, other RTX divisions, and within external technical communities. Iuliana is actively engaged in recruitment, training, mentoring, and development of talent. Dr. Cernatescu has over 20 years of industrial experience in Materials Characterization. She joined P&W in 2011 as an X-Ray Analytical Methods subject matter expert, and later became the Discipline Chief for Materials Characterization and subsequently the Manager of the Materials Characterization Group and Laboratories where in addition to leading the technical and strategic direction for the discipline, she modernized the laboratory facilities and developed new partnerships, expanding P&W’s material characterization capabilities. Prior to joining P&W, she worked at two major companies that produced Material Characterization systems, where she served as a technical leader for new methods & systems development and implementation. Dr. Cernatescu holds a Master’s Degree in Physics and a Ph.D. in Materials and Solid State Physics from Eötvös Loránd University of Science, Budapest, Hungary. She is the author of 8 patents and more than 25 peer reviewed technical publications.

Steven C. Freilich

Member

STEVEN C. FREILICH is currently Executive-in-Residence at the Princeton University Andlinger Center for Energy and Environment, and holds a similar position in the Joint Institute for Strategic Energy Analysis at National Renewable Energy Laboratory, having recently retired from DuPont after a 33 year career. While at DuPont, he served as the Director of Materials Science. In that role, Dr. Freilich was responsible for developing and implementing technology growth strategies in rapidly moving areas such as materials for energy, displays, and biomedical applications. He used his experience to impact corporate innovation through leadership at the interface of technology and markets. During his tenure as Director of Materials Science, Dr. Freilich held the additional position of CTO of DuPont Electronics and Communication and was appointed as the Chief Technology Advocate for North Asia. He has served on the boards of the United States Display Consortium, the DuPont-MIT Alliance, and was the Vice Chair of both the Advisory Panel for the Center for Revolutionary Solar Photoconversion and the Advisory Committee for the Clean Energy Manufacturing Analysis Center in the Department of Energy. He has also served on the advisory boards for Sandia National Laboratory, the NREL, and the NRC of Canada

Gary S. Groenewold

Member

GARY S. GROENEWOLD is a recently retired Scientist with 35 years of service at the Idaho National Laboratory. During this span, Dr. Groenewold’s broad research interests involved investigations of reactivity and measurement of molecular and atomic species of importance in military, nuclear, and industrial enterprises. His research emphasized analysis of material surfaces, focusing on adsorbed organic and inorganic species in ambient environments. He specialized in mass spectrometry, and many studies utilized secondary ion mass spectrometry for surface characterization. He has authored approximately 150 peer reviewed publications in these diverse areas, a significant fraction of which address surface analysis. Dr. Groenewold holds a Ph.D. in chemistry from the University of Nebraska and completed a postdoctoral fellowship at the Oak Ridge National Laboratory. Dr. Groenewold has co-authored six National Research Council (NRC) reports in the area of chemical demilitarization and served as the chairman of the Chemical Demilitarization Committee of the NRC from 2013 to 2017. He is a National Affiliate of the NRC.

Minki Hong

Member

MINKI HONG is the Senior Manager of Kyulux North America. He is responsible for developing a web-based materials informatics platform for OLED (organic light-emitting diode) applications. The platform includes a high-throughput virtual screening system, a computational job managing system, and a data management system. Dr. Hong supervises scientific research on molecular discovery and machine learning prediction models, as well as software and system development for the platform. Prior to joining Kyulux North America, Dr. Hong worked as a postdoc at King Abdullah University of Science and Technology and Georgia Institute of Technology. His postdoctoral research focused on the degradation mechanism of organic materials. Dr. Hong earned his Ph.D. in Materials Science and Engineering from the University of Florida and has over 10 years of experience in computational materials science of various materials, including oxides, nitrides, and organic materials. He possesses a broad knowledge of first principles calculation methods and related software packages, as well as experience in lattice/molecular dynamics. Dr. Hong is also trained as an experimentalist and is well-versed in inorganic thin-film growth for optoelectronic devices. Thus, he is familiar with ultra-high vacuum technology and related characterization methods.

Mohammad A. Khaleel

Member

MOHAMMAD A. KHALEEL is the Associate Laboratory Director (ALD) of Oak Ridge National Laboratory (ORNL) for National Security Sciences and oversees capabilities in protection of nuclear materials, defense materials and manufacturing, cyber-physical security, and human security. He previously served as ORNL’s Deputy Director for Science and Technology (interim) and ORNL’s Deputy Director for Projects. He was the ALD for Energy and Environmental Science and oversaw a broad portfolio in biological and environmental sciences, and energy efficient transportation, building, and manufacturing. He was the Executive Director of the Qatar Environmental and Energy Research Institute from 2013-2015. Dr. Khaleel held several technical and senior managerial positions at Pacific Northwest National Laboratory where he was a Laboratory Fellow (highest scientific rank by promotion) and led the Computational Sciences and Mathematics Division from 2003 to 2013. Dr. Khaleel received his Ph.D. in Structural Engineering/Mechanics from Washington State University and his MBA from University of Washington. He has extensive multidisciplinary research experience with over 250 technical papers and three patents. His research interests have been in electrocatalytic materials and systems, superplasticity, dislocation dynamics, and lightweight materials. He is currently an adjunct Professor in the School of Materials Science and Engineering at Georgia Tech, a member of the Washington State Academy of Sciences, and a Fellow of the American Society of Mechanical Engineers, the American Society of Civil Engineers, and the American Association for the Advancement of Science.

Richard LeSar

Member

RICHARD A. LESAR has served as a Materials Science and Engineering Professor at Iowa State University Since 2006. Prior to that, he worked at the Los Alamos National Laboratory, as a postdoctoral fellow, research scientist, and in management. His research uses computational modeling to study the properties of materials, with a long-term interest in multiscale models and work spanning from electronic structure methods to theoretical mechanics. His current work is focused primarily on developing and applying polycrystal plasticity calculations (based in part on discrete dislocation mechanics), developing multiscale simulations of additive manufacturing, and an increasing focus on developing new computational strategies for multiscale design. LeSar is a Fellow of the American Physical Society and of AAAS. He served on the Scientific Advisory Board (SAB) for the US Air Force (2005-9) and SAB S&T review panels for the AFRL Materials and Manufacturing Directorate, Air Vehicles Directorate, and Office of Scientific Research. He received his BS in Chemistry from the University of Michigan (1975) and, from Harvard University, an AM in Physics (1977) and a Ph.D. in Chemical Physics (1981). In 2006-8, LeSar served on the NASEM study panel on Integrated Computational Materials Engineering

Frances S. Ligler

Member

FRANCES S. LIGLER (NAE) is the Eppright Chair and Professor of Biomedical Engineering at Texas A&M University. From 2013-2022, she was the Ross Lampe Distinguished Professor of Biomedical Engineering at NC State and UNC Chapel Hill Before 2013, she was at the U.S. Naval Research Laboratory for 28 years, during the last 18 of which she was the U.S. Navy Senior Scientist for Biosensors and Biomaterials. She earned a B.S. from Furman University and both a D.Phil. and a D.Sc. from Oxford University. She has over 450 full-length publications and patents, which have led to eleven commercial biosensor products and generated an H=85 (Google Scholar). She was elected an SPIE Fellow in 2000, a member of the National Academy of Engineering in 2005 (2020 winner of the Ramo Founders Award), a Fellow of AIMBE in 2011, a Fellow of AAAS in 2013, a Fellow of the National Academy of Inventors in 2016, and an Honorary Member of the Hellenic Society for Nanotechnology in Health Sciences in 2017. In 2003, she was awarded the Presidential Rank of Distinguished Senior Professional by President Bush. In 2012, she was awarded the Presidential Rank of Meritorious Senior Professional by President Obama. In 2014 and 2018, she was awarded honorary doctorates from the Agricultural University of Athens, Greece, and Furman University, respectively. She is a 2017 inductee of the U.S. National Inventors Hall of Fame, honored for her invention of portable optical biosensors. In 2015, Ligler chaired the review panel for the assessment of NIST MML.

Qinghuang Lin

Member

QINGHUANG LIN is the president of Linktech International LLC. Linktech is a consulting firm for the semiconductor and materials industries focusing on semiconductor technology, materials, wafer fabrication and testing equipment, workforce development, supply chain management, and sustainability. It aims to enable clients to innovate to meet customer’s needs for an increasingly digitized, interconnected, and knowledge-centric economy and for the betterment of people’s lives. He was previously the Director of Advanced Technology Development at Lam Research in Fremont, California. He is an SPIE Fellow, an ACS Fellow, a PMSE Fellow, and a POLY Fellow. For 15+ years, he has held technical and executive positions in photoresist development, advanced lithography, BEOL materials & integration, 3D integration, semiconductor equipment, and semiconductor technology strategy for several nodes of CMOS technology research and development at Lam Research, IBM, and ASML. He holds more than 120 granted US patents and is the author and co-author of over 100 technical papers. Dr. Lin is the recipient of the Industrial Polymer Scientist Award (2018), Roy W. Tess Award (2020), E.V. Murphree Award (2023), and several IBM Awards. He is Co-Chair of the SPIE Advanced Lithography and Patterning (2021-2023) and serves as an associate editor of Journal of Micro/Nanopatterning, Materials, and Metrology (JM3). Dr. Lin received a Ph.D. degree in Materials Science and Engineering from the University of Michigan, Ann Arbor, and a M.S. degree and a B.E. degree from Tsinghua University, China

David Mellor

Member

DAVID MELLOR leads the policy and incentive programs at the Center for Open Science as Director of Policy. These initiatives seek reward increased transparency and reduced bias in scientific research and are covered in the Transparency and Openness Promotion Guidelines (TOP: cos.io/top). His research background and professional training include behavioral ecology, citizen science, and research methods and policy. Dr. Mellor received his Ph. D. in Ecology and Evolution from Rutgers University

Nicola Pohl

Member

Nicola POHL is a professor of chemistry, the Joan and Marvin Carmack Chair in Bioorganic Chemistry, and the Associate Dean of Natural and Mathematical Sciences and Research for the College of Arts and Sciences at Indiana University Bloomington. She was a professor of chemistry and of chemical and biological engineering and held the Wilkinson Professor of Interdisciplinary Engineering at Iowa State University before moving to Indiana University. The Pohl research group works to find new ways to make and analyze sugars to dissect their important roles in plant, animal, and human biology and to design therapeutics. One major long-term goal of the group is to develop rational designs of therapeutic interventions, such as vaccines and glycoproteins, on the basis of a deeper knowledge of the role of carbohydrates. Her research group created the first automated solution-phase method for readily synthesizing oligosaccharides and is now working to expand the scope of those methods to tackle the equal challenge of providing building blocks to feed their automated oligosaccharide synthesis machines. Dr. Pohl received her Ph.D. in chemistry from the University of Wisconsin-Madison and completed a National Institutes of Health Postdoctoral Fellowship in the Department of Chemical Engineering at Stanford University.

Jayakanth Ravichandran

Member

JAYAKANTH RAVICHANDRAN is an Associate Professor in the Mork Family Department of Chemical Engineering and Materials Science with courtesy appointment in Ming Hsieh Department of Electrical and Computer Engineering at University of Southern California. He holds the Philip and Cayley MacDonald endowed early career chair. His research interests are in materials design, synthesis, characterization, and physical properties of complex materials for electronic, photonic, and energy applications. His honors include the 2020 TMS Young Leader Professional Development Award and 2017 Early Career Scholar in Materials Science by the Journal of Materials Research. He received his Ph.D. degree from University of California, Berkeley in 2011. He performed post-doctoral research at Columbia University and briefly at Harvard University, before joining USC in 2015 as an Assistant Professor.

James W. Ringer

Member

JAMES W RINGER is currently the president of Innovative Process Solutions LLC, where he provides consulting expertise in research, manufacturing, and business strategies. His Professional Experience includes Innovative Process Solutions LLC, President, (2021-2023) for technology and new business development. Strategic leadership of large organizations (design and leadership development), innovation strategies to drive value capture, value generation strategies (implementation of new innovation concepts & continuous improvement programs), and technology portfolio strategies (pipeline development, portfolio optimization, technology solutions); Corteva, Active Ingredient Process Development and Bioprocessing and Bioengineering R&D Leader (2017-2019). Led new technology identification & development for both chemistry and fermentation process, delivery of financial impact through implementation of new R&D processes into commercial operations, and identification external partnerships (academic and industry). The Dow Chemical Company - Midland, MI, Director of Engineering and Process Sciences (2010-2017). Led organization of 160 personnel for new technology development & implementation of new R&D processes into commercial operations for multiple Dow businesses (>20 business units including electronic materials, polymers, agrichemicals, coatings, etc.), and development & execution of >20 university projects. Dr. Ringer graduated from Purdue University (B.S. in Chemistry) and University of Wisconsin (Ph.D. in Organic Chemistry). He authored/co-authored 15 Granted Patents with more than 25 patent applications. He was a recipient of TDCC Michigan Scientists Organization Excellence in Science Award, received the DAS “Increase the Slope Award” in 1994 and 1999, a TDCC WRAP award, multiple Awards for manufacturing improvements, and the 2013 Noland Poffenberger Award from AIChE. He is currently a member of American Chemical Society.

George Rodriguez

Member

GEORGE RODRIGUEZ is a Chief Scientist at ExxonMobil Technology & Engineering (EMTEC). He obtained undergraduate degrees in Chemistry and Mathematics from SUNY Geneseo. Upon joining Exxon in 1997 with a Ph.D. in Inorganic Chemistry from the University of Rochester, he completed a Masters in Statistics from the University of Houston-CL focusing on the application of Statistical Design of Experiments to understand workflows in High Throughout Experimentation. Dr. Rodriguez has worked in organometallics, polymers, computational chemistry, chemometris, and cheminformatics. He recently led teams at ExxonMobil who were using quantum chemistry, soft matter physics, and Data Science to accelerate the discovery pipeline of homogeneous catalysts and polymers. He was involved with researchers at the University of North Texas-Denton to explore computational chemistry and Statistical Learning in the development of organometallic catalysts and is a co-investigator in a DMREF/GOALI program with researchers at MIT to design additives which control polymer morphology and performance. He is a member of the American Chemical Society and the American Statistical Association (Statistical Learning and Data Science Section).

James E. Saal

Member

JAMES E. SAAL is the Director of External Research Programs at Citrine Informatics, where he manages Citrine's government-funded research programs, advancing the state-of-the-art in materials informatics with collaborators. Before joining Citrine in 2018, he was Manager of Technology at QuesTek Innovations, leading programs in alloy design and ICME methods development. Dr. Saal earned his B.S. in Materials Science and Engineering from Rice University in 2005, and his Ph.D. in Material Science and Engineering from The Pennsylvania State University in 2010, where he focused on the integration of density functional theory with CALPHAD. He continued his postdoctoral study at Northwestern University, developing a high-throughput materials property database and studying Mg- and Co-based alloys. Since then, Dr. Saal has specialized in computational simulation of process-structure-property relationships, ICME design of new materials, and the use of data-driven methods in materials science. His research has included alloys, ceramics, and polymers, and diverse properties such as corrosion, additive manufacturing printability, and thermoelectric performance. Dr. Saal is the author of over 50 peer-review publications, several patents on designed alloys, and a co-edited book on Computational Materials System Design. He currently serves as a Trustee of ASM International and the Chair of the TMS ICME Committee

Marc Salit

Member

MARC SALIT is a measurement scientist who has worked in chemistry, physics, and biology over a career in the public, private, and academic sectors. He realized significant advances in these fields in more than 28 years of work at the US National Institute of Standards and Technology (NIST). He contributed to the modernization of chemical metrology and developed worlds-best measurement capability to support calibration of elemental analysis, broadband UV-Visible wavelength metrology, and the world's first standard materials for the human genome. He has contributed 97 papers to the scientific literature. While at NIST he established a partnership between Stanford University, NIST, and the SLAC National Accelerator Lab to form a "Joint Initiative for Metrology in Biology." To seed this, he moved half of his research group to Stanford University from NIST in 2013 and established academic partnerships across the Engineering and Medical Schools. His recent research interests have been focused on innovation and development of measurement science, standards, methods, and tools for biology. Such tools are at the foundation of our ability to generate and sustain scientific advance by enabling sharing of reproducible data, results, and materials; distribution of labor by supporting accurate, low-friction transactions; confidence in technologies permitting regulated applications; and access to quantitative measurement of previously inaccessible phenomena – all through systematic application of the principles of metrology. He is at MITRE as a Fellow, pursuing these interests to establish the ecosystem that brings wider.

Isaac C. Sanchez

Member

ISAAC C SANCHEZ, NAE, is a Professor of Chemical Engineering and William J. (Bill) Murray, Jr. Endowed Chair in Engineering at the University of Texas at Austin. Dr. Sanchez is an expert in the properties of polymer liquids, solutions, and blends. He attempts to solve problems in polymer science and engineering by studying polymer interfacial phenomena, and how changes in temperature, pressure, and volume affect polymers. He develops models and uses computer simulations to understand polymer solubility and conformation and to understand the role of water in polymer processes. He received his Ph.D. in physical chemistry from the University of Delaware.

Alix L. Schmidt

Member

ALIX SCHMIDT is a senior data scientist at Dow Chemical leading programs in predictive formulation and machine learning model deployment strategy. Her previous roles in Dow and Dow Corning include process research for silicone-organic copolymer production, high throughput research for catalyst discovery, and manufacturing chemometrics for operations troubleshooting. She is an expert in statistics and machine learning as applied to chemicals and materials, and through her roles has been involved in all phases of the data lifecycle – experimental design, data generation and collection, data storage, data cleaning, and data analysis/modeling. Dr. Schmidt is an expertise leader in Dow’s Citizen Data Science training program, developing and delivering foundational training on data stewardship and programming to researchers. She is a member of the American Institute of Chemical Engineers and has chaired conference sessions on data analytics at the spring meetings since 2017. She has a BS in chemical engineering from University of Illinois at Urbana-Champaign and a MS in Predictive Analytics from Northwestern University.

Jesse C. Seegmiller

Member

JESSE C SEEGMILLER is a board-certified clinical chemist in the Division of Clinical Chemistry at the University of Minnesota. He focuses his research activities on esoteric testing where he primarily employs mass spectrometry to analyze and develop methods for biological samples in the Advanced Research and Diagnostics Laboratory. He also oversees clinical laboratories at M Health Fairview including the Drug Analysis Laboratory and Acute Care Laboratory. Dr. Seegmiller also serves as the Medical Director for the M Health Fairview Maple Grove Laboratory. Before his fellowship and faculty appointment, Dr. Seegmiller worked in industry for a mass spectrometry company as a product applications specialist in clinical applications. Dr. Seegmiller earned a Ph.D. in chemistry from the University of Wyoming and a BS in chemistry from the University of Minnesota, Duluth (2000).

Johnna S. Temenoff

Member

JOHNNA TEMENOFF is the Carol Ann and David D. Flanagan Professor in the Coulter Department of Biomedical Engineering at Georgia Tech/Emory University, in Atlanta, GA. Dr. Temenoff is also currently the Deputy Director of the NSF Engineering Research Center in Cell Manufacturing Technologies (CMaT). Scientifically, Dr. Temenoff develops new biomaterials for use in cell manufacturing and regenerative medicine applications. At CMaT, she co-leads a center that spans 8+ research institutions throughout the U.S., with over 200 researchers working to develop new manufacturing technologies for emerging biologic therapies. Dr. Temenoff has received the NSF CAREER Award and was named to the College of Fellows of the American Institute for Medical and Biological Engineers (AIMBE), as a Fellow of the Biomedical Engineering Society (BMES), and as a Fellow of Biomaterials Science and Engineering, International Union of Societies for Biomaterials Science and Engineering (IUSBSE). She was recently awarded the Clemson Award for Contributions to the Literature from the Society for Biomaterials. Dr. Temenoff received a B.S., in Biomedical Engineering and a B.A. in French from Case Western Reserve University (1998). She was then granted a Ph.D. in Bioengineering from Rice University in 2005.

Cristina Thomas

Member

CRISTINA THOMAS has more than 34 years of technical and leadership experience in research and development organizations including in the Venezuelan oil industry, IBM (New York), and 3M (Minnesota). She has undergraduate degrees in Chemistry and Mathematics and a Ph.D. in Chemical Engineering. She is currently 3M’s Senior Director for Global R&D Services and R&D GPO and has had prior assignments as Strategy Manager, Laboratory Manager, Commercialization Manager, Design for Six Sigma (DFSS) Technical Black Belt, and Group Leader of Materials Modeling. She is a coinventor in more than 25 patents and is recognized for persistently nurturing team high performance to deliver innovative ideas that move new technologies into markets. Dr. Thomas has a passion for institutions that focus on education of underrepresented students and women in science and engineering. She is a board member at Crito Rey Jesuit Twin Cities High School and at Project Scientist. She leads 3M Science Encouragement Programs and is a member of the AIChE Corporate Council & Industry Leader's and the Government University Industry Research Roundtable sponsored by National Academy of Science. She received the 2019 AIChE Industry Leadership Award, and the 2019 AICHE Management Division Award, and is an ACS fellow, an ACS PMSE fellow, and an AIChE fellow. She enjoys spending time with her husband and her three accomplished and caring adult children.

Ockert Van Der Schijff

Member

OCKERT VAN DER SCHIJFF is a Principal Engineer in Exponent's Materials and Corrosion Engineering practice. He is a chemical and metallurgical engineer with almost 4 decades of experience in the materials engineering field. He specializes in aqueous corrosion of materials in industrial applications and materials failure analysis in utility, manufacturing, and chemical processing environments. He has managed and participated in a wide variety of forensic investigations, failure analyses, and condition assessments on individual above-ground and buried components such as piping, valves, pumps, tanks, presses, fire protection systems, reactors, bearings, medical devices, and manufacturing machinery to determine the root cause for in-service failures. Dr. Van Der Schijf is a recognized industry-expert on corrosion and microbiologically influenced corrosion (MIC) of fire protection systems and the use of nitrogen as a supervisory gas in dry and preaction fire protection systems. He also provides consulting services in the fields of corrosion of metals, microbiologically influenced corrosion (MIC), medical device corrosion and failure, materials selection, alloy development, and AC and DC electrochemical techniques for investigation of corrosion mechanisms of metal alloys. Since 2001, Dr. Van Der Schijff has served as an expert witness on a number of diverse litigation cases dealing with corrosion of river going barges, corrosion failure of home heating furnaces, internal corrosion of wet, dry, and pre-action fire protection systems, corrosion of buried fuel and gas piping, corrosion resulting from defective drywall, , caustic cracking of refinery components, stress corrosion cracking of dairy processing equipment, pinhole leaks in domestic copper piping, and premature corrosion and/or failure of brass, copper and stainless steel plumbing components. Prior to joining Exponent, Dr. Van Der Schijff founded CorrConsult, LLC, a consultancy providing consulting and litigation support services in the areas of corrosion engineering, metallurgy, forensic science, and failure analysis. Earlier, he was employed at Altran Corporation for a period of 9 years from 1995 through 2003. In his position as Principal Engineer, he was responsible for business development, project management, failure analysis, and contract research in the materials science disciplines. From 1984 to 1996 Dr. Van Der Schijff was an Associate Professor in the Department of Metallurgical Engineering at the Potchefstroom University in South Africa. In addition to teaching undergraduate courses in materials science, corrosion, pyrometallurgy, and thermodynamics, he conducted research in the field of corrosion. During this time, he also consulted widely to industry in the fields of chemical engineering, materials science, metallurgical engineering, corrosion, and wear. Previously, Dr. Van Der Schijff was employed by the Council for Mineral Technology (MINTEK) in South Africa as a contract researcher where he conducted research into the plasma smelting of directly reduced iron. This led to a Master's Degree in Metallurgical Engineering from The University of Pretoria in 1986. Dr. Van Der Schijff completed a Ph.D. in metallurgy at the University of Connecticut in 1990 where he worked in the Institute of Materials Science under the advisorship of Prof. Owen Devereux. In 2001, he was awarded an MBA from the Potchefstroom Business School at North-West University.

Katie Bratlie

Staff Officer

KATIE BRATLIE is the Director of the Laboratory Assessments Board (LAB) and is responsible for directing all program and research activities conducted under LAB. Prior to joining the Academies, she worked as a Program Director at the National Science Foundation where she managed the Partnerships for Innovation and the Small Business Innovation Research programs. The aim of both of these programs is to translate technology from academic or research settings to commercialization. She provided strategic input to shape both of these programs, along with guidance to the companies that she funded. She held a portfolio of funded companies that developed commercially viable products, many of whom had successful exits through mergers and acquisitions or IPOs. Katie also worked for more than 10 years in academia as a Professor, responsible for grant management, overseeing research staff, and disseminating research results. She earned her Bachelors from the University of Minnesota, Minneapolis in Chemistry and her Ph.D. from the University of California, Berkeley. She was an NIH postdoctoral fellow at MIT.