

National Materials and Manufacturing Board

Committee

Theresa Kotanchek

Chair

Theresa Kotanchek is the chief executive officer and co-founder of Evolved Analytics LLC, a data science and system design, software and solutions provider. Prior to assuming this role, she spent 23 years in executive and leadership positions at Dow Chemical, including Vice President for Sustainable Technologies and Innovation Sourcing (2010-2013). From 2005-2010, she served as the chief technology officer of Dow Chemical China Company Limited, leading Asia Pacific R&D, including the development of Dow's state-of-the-art 1 million square foot R&D center in Shanghai, China, and the staffing of more than 1,200 scientists and engineers across the region. Over the course of her Dow tenure, she held numerous business and corporate roles, including Global Director in Dow Plastics, Dow Ventures and Corporate R&D. In 2011-2012, she served as the industrial led and working group co-chair of President Obama's Advanced Manufacturing Partnership Initiative. In 2013-2014, she served on the U.S. National Academy of Engineers "Making Value for America" committee, and currently serves on numerous university boards, including Penn State's Department of Materials Science and Engineering and Georgia Tech's Manufacturing Institute and Materials Institute. Kotanchek holds a Ph.D. in materials science, a M.S. in ceramic science, and a B.S. in ceramic science and engineering from Pennsylvania State University. She has published over 100 technical articles, holds 6 US patents, and has given over 200 invited talks. She is an active member of the American Chemical Society, Materials Research Society, Council of Industrial Research, and Society of Women Engineers.

John Klier

Vice Chair

John Klier [NAE] is a Professor and Department Head of Chemical Engineering at the University of Massachusetts, Amherst. Dr. Klier's current research focus is on combining surfactant and functional polymer assembly and association phenomena with state of the art processing technologies to produce new structured polymer, hybrid and colloidal materials. These materials are used to address key application needs in collaboration with industrial, agency and governmental partners. Dr. Klier joined the UMass department of Chemical Engineering as Department Head and Professor at the end of 2015 after a 26-year career at The Dow Chemical Company. While at Dow, he worked in numerous areas of polymer, surfactant and colloid science. Responsibilities included leading the materials-related organizations in Core R&D, leading Dow Coating Materials research and development organization, and most recently leading the Performance Materials and Chemicals divisional research, development and technical service organizations. In 2014, he was named Distinguished Fellow, the highest technical position at Dow. Dr. Klier is a member of the National Academy of Engineering, the National Academy of Inventors, and several professional organizations. He has been awarded with The AIChE Industrial Research and Development Award in 2015, and the Purdue Outstanding Chemical Engineering Award (2015). He earned his B.S. from MIT in 1984, and his M.S (1986) and Ph.D (1989) from Purdue University, all in Chemical Engineering.

Kevin R. Anderson

Member

Kevin Anderson [NAE] is the Senior Technical Fellow for Brunswick Corporation. He was previously the leader of aircraft materials and physical metallurgy at Reynolds Aluminum Research. He is a member of The U.S. National Academy of Engineering (NAE) for his work on sustainable aluminum alloy design. Dr. Anderson is an inventor of high damage tolerant diecasting alloys that are made from 100% recycled aluminum which saves 94% of the energy, and generates 25 times less CO₂, compared to alloys which are made from primary aluminum. These alloys are registered with the Aluminum Association. Dr. Anderson has taught aluminum metallurgy on an international level since 1999, has over 30 U.S. patents, is a fellow of ASM, the chairperson of the peer committee of NAE for materials, and is a member of TMS, the U.S. National Materials and Manufacturing Board, the Aluminum Association Technical Committee on Product Standards and Subcommittee on Alloy and Temper Registration. Dr. Anderson been the past chairperson of both the Advanced Casting Research Consortium and the Materials Innovation Committee of TMS.

Felicia J. Benton-Johnson

Member

Felicia Benton-Johnson has been an educator for more than twenty years. Currently, she is the Assistant Dean in the College of Engineering at the Georgia Institute of Technology, where she directs the Center for Engineering, Education and Diversity (CEED). In this capacity, she oversees precollege development, recruitment, transfer programs and academic diversity initiatives as they relate to attracting, empowering, and retaining undergraduate, graduate, and post graduate diverse talent in engineering.

The College of Engineering consistently ranks in the Top 10 engineering schools in the country, both in size and program quality. Currently the College ranks 4th in undergraduate programs according to US News and World Report (as of Fall 2021). Georgia Tech's student population is more than 25,000 of which over 60% are in the College of Engineering. With an annual budget of over a million dollars, Dr. Benton-Johnson oversees numerous programs that are geared towards supporting a cadre of diverse students in STEM. The initiatives housed in CEED are as follows: Engineering Information Sessions given to prospect students; two transfer programs, the Dual Degree Engineering Program and the Regents Engineering Pathways Program; an undergraduate peer mentoring program that provides financial support, professional development and social/academic advisement to students known as the Peer to Peer mentoring program (P2P); a scholarship program - Retaining Inspirational Students in Engineering and Technology (RISE); the Summer Undergraduate Research Experience (SURE), a 10-week undergraduate research experience for junior and senior underrepresented minority undergraduate students from across the nation; financial support to offset the cost of student fees - Graduate Retaining Inspirational Students in Engineering and Technology (GradRISE); and a graduate mentoring program -Graduate Retention Enrichment and Academic Champions (GRAD REACH). In addition, she is responsible for four institutional programs: The National Science Foundation funded Louis Stokes Alliance for Minority Participation (LSAMP) and the Alliances for Graduate Education and the Professoriate Research University Alliance (AGEP-RUA); the National Action Council for Minorities in Engineering (NACME) and the National GEM Consortium.

Dr. Benton-Johnson has mentored hundreds of students and because of these efforts, she received the Georgia Tech Mentor of the Year award from the Vice President for Institute Diversity for inspiring and encouraging diverse populations in higher education. In addition, her center received the 2017 Institute Unit Diversity Champion's Award which is given to units who actively demonstrated and positively promoted the concepts of diversity, equity, and inclusion within the Georgia Tech campus community. She is a member of the Executive Board of Directors for the National GEM Consortium where she serves as Vice Chair as well as she serves on several Georgia Tech committees.

Dr. Benton-Johnson received her B.S. and M.Ed. degrees in biology and curriculum and instruction from Tennessee State University in 1993 and 1996 respectively; as well as her Ed.D. in higher education leadership with emphasizes on diversity initiatives from University of Sarasota, Florida in 2005. Dr. Benton-Johnson, a native of Memphis, Tennessee, is married to Micheal Johnson. They have two daughters, Blake, and Bailey (ages 19 and 16, respectively).

William B. Bonvillian

Member

William B. Bonvillian is a Lecturer at the Massachusetts Institute of Technology, in MIT's Science Technology and Society Department, teaching courses on innovation and on science and technology policy. He is a Senior Director, for Special Projects, at MIT's Office of Open Learning and Senior Director at MIT's Initiative for Knowledge, Innovation and Manufacturing (IKIM), and, is conducting research projects on workforce education. Previously, he was Director of MIT's Washington, D.C. Office between 2006 and 2017, supporting MIT's historic role on national science and technology policy. He was an advisor to MIT's Production in the Innovation Economy study issued in 2013, and participated for MIT in the President's industry-university Advanced Manufacturing Partnership and its reports of 2011 and 2014. Prior to MIT, he served for over fifteen years as a senior policy advisor in the U.S. Senate working on innovation issues.

His book, *Workforce Education, a New Roadmap*, with Sanjay E. Sarma, was released in 2021 by MIT Press and evaluates new models for workforce education. *Advanced Manufacturing - The New American Innovation Policies* (with Peter L. Singer) was published by MIT Press in 2018 and reviews strategies for production innovation to enable advanced manufacturing systems. His 2015 book *Technological Innovation in Legacy Sectors*, with Charles Weiss of Georgetown, was published by Oxford University Press and takes up the challenge of bringing innovation to complex, established "legacy" economic sectors that constitute most of the economy. Their book *Structuring an Energy Technology Revolution*, published by MIT Press in 2009, proposed new models for energy technology innovation. He was coeditor of *The DARPA Model for Transformative Technologies* from Open Book Publishers in 2020, which collected leading articles on DARPA. He has written extensively on science and technology policy issues in numerous journals, including *Science*, *Issues in Science and Technology*, *Nature*, *Science and Public Policy*, *Innovations*, *Annals of Science and Technology Policy*, *Environment*, and *American Interest*.

He has lectured and given speeches before numerous organizations and universities on science, technology and innovation questions. He has testified before Congress' House Science and Technology Committee, the Senate Commerce Committee, the House Defense Appropriations Subcommittee, and before the UK Parliament's Committee on Science and Technology.

He is on the National Academies of Sciences' standing committee for the Science Policy Forum, and has served on eight other Academies' committees. He chaired the AAAS standing Committee on Science, Engineering and Public Policy (COSEPP) between 2017 and 2021, is on the GAO's Polaris Council on Science and Technology and is on the Board of the Information Technology and Innovation Foundation. He has degrees from Columbia, Yale and Columbia Law School. He was the recipient of the IEEE Distinguished Public Service Award in 2007 and was elected a Fellow by the AAAS in 2011.

Gary S. Calabrese

Member

Gary Calabrese retired from Corning Incorporated in 2022 as senior vice president and head of Global Research. Previously he worked at Polaroid, Allied-Signal, and Rohm and Haas where he headed their corporate research laboratory and later became vice president and chief technology officer. Dr. Calabrese holds a B.S. degree in chemistry from Lehigh University, and a Ph.D. in inorganic chemistry from MIT. He is a Fellow of the American Association for the Advancement of Science, a member of the National Academy of Engineering, the American Institute of Chemical Engineers and the American Chemical Society. Calabrese has served on many advisory boards including the Council for Chemical Research, Chemical & Engineering News, and the American Chemical Society. He also was an advisory board member for Cornell University's Department of Chemical and Biomolecular Engineering, and the Visiting Committee for the Department of Chemical Engineering at M.I.T. He has over 70 patents and technical publications.

Jian Cao

Member

Jian Cao is the Cardiss Collins Professor and the founding Director of NIMSI, the university research center on manufacturing science and innovation at Northwestern University. Cao considers manufacturing as an integration platform and specializes in innovative manufacturing processes and systems, particularly dieless incremental forming process and laser processes. Cao received her Ph.D. in mechanical engineering from M.I.T. Cao is a member of the National Academy of Engineering (NAE) and an elected Fellow of the American Association for the Advancement of Science (AAAS), ASME, CIRP, and SME. Her major research awards include the ASME Milton C. Shaw Manufacturing Research Medal, SME Gold Medal, DoD Vannevar Bush Faculty Fellowship, ASME and Pi Tau Sigma Charles Russ Richards Memorial Award, and SME Frederick W. Taylor Research Medal. Prof. Cao is the Editor-in-Chief of the Journal of Materials Processing Technology. She served as Associate Vice President for Research at Northwestern University, President of the SME North America Manufacturing Research Institute, and a program director at NSF. Dr. Cao is a board member of SME Board of Directors, and of mHUB, Chicago's first innovation center focused on physical product development and smart manufacturing.

Elliot L. Chaikof

Member

Elliot L. Chaikof, MD, PhD [NAM] is the Johnson and Johnson Professor of Surgery at Harvard Medical School and serves as Chair of the Department of Surgery and Surgeon-in-Chief at the Beth Israel Deaconess Medical Center in Boston. Dr. Chaikof is a member of the faculty at Massachusetts Institute of Technology in the Harvard-MIT Division of Health Sciences and Technology and a principal faculty member in the Harvard Stem Cell Institute, as well as associate faculty of the Wyss Institute of Biologically-Inspired Engineering of Harvard University and the Broad Institute of MIT and Harvard. Prior to joining the faculty at Harvard University, Dr. Chaikof held the John E. Skandalakis Chair of Surgery at Emory University, serving as Chief of Vascular Surgery. He also served as Adjunct Professor of Chemical Engineering and a member of the Biomedical Engineering faculty at the Georgia Institute of Technology. Dr. Chaikof has made contributions that have advanced the fields of biomaterials, tissue engineering, drug delivery and drug discovery.

Dr. Chaikof served as the Emory University PI of the “Georgia Tech/Emory Center for the Engineering of Living Tissues”, an NSF sponsored Engineering Research Center. As an engineer and surgeon, Dr. Chaikof formulated clinical trial reporting standards for the assessment of emerging endovascular technologies, including device failure modes for endovascular grafts, which continue to provide ongoing regulatory guidance to the FDA and medical device industry that are ensuring the safety and effectiveness of critically important cardiovascular devices. He has led multiple NIH Common Fund programs, in both somatic cell genome editing and glycotecchnology, that are advancing strategically important technological areas in health and wellness. Dr. Chaikof was one of the principal scientific co-founders of Silicon Therapeutics, which was acquired by Roivant Sciences (NASDAQ: ROIV) as a transformative platform to advance the technology of drug discovery through integrating quantum mechanics, statistical thermodynamics, and molecular simulations with medicinal chemistry.

In the National Academy of Medicine (NAM), Dr. Chaikof served as Vice Chair and Chair of Section 1 (Physical Sciences, Mathematics, Computer/Information Sciences, Engineering Sciences) and co-founded the NAM Health and Technology Interest Group (IG18), serving as the current Co-Chair. Dr. Chaikof has served on multiple classified panels for the National Academy Division on Engineering and Physical Sciences and the Army Research Laboratory Technical Assessment Board (ARLTAB). He currently serves as a member of the Roundtable on Biomedical Engineering Materials and Applications (BEMA) of the National Materials and Manufacturing Board (NMMB), the Standing Committee of Biotechnology and National Security Needs of NASEM, and as a member of the Committee on Emerging Science, Technology, and Innovation in Health and Medicine (CESTI) of the National Academy of Medicine.

Julie A. Christodoulou

Member

Julie A. Christodoulou is recently retired from the position of Director, Naval Materials & Manufacturing Division at the Office of Naval Research (ONR). At ONR she led a multifaceted science and technology program that included basic and applied research of materials systems, advanced development, and manufacturing technology. A defining aspect of all efforts is an emphasis on the integration of experimental and computational work to accelerate the development of foundational understanding and technology insertion. She has served critical roles in the formation and leadership of the Materials Genome Initiative, and establishment of the Materials Manufacturing Institute, Lightweight Innovations for Tomorrow (LIFT); and has held leadership positions within the DoD Reliance 21 Program and The Technical Collaboration Program, an international body that coordinates member nations' defense science and technology investments. She has been recognized with the Department of Navy Meritorious Civilian Service Award, the Presidential Rank of Meritorious Senior Executive, the Acta Materialia 2018 Holloman Award and Distinguished Lecture, the 2016 ASM-TMS Joint Distinguished Lectureship on Materials and Society, the 2013 TMS Leadership Award, and is a Fellow of ASM International. Dr. Christodoulou earned her PhD in materials science from Imperial College, London. She has briefed the NMAB, supporting studies on Accelerating Materials Transition and Integrated Computational Materials Engineering.

Teresa Clement

Member

Teresa Clement is a Senior Principal Systems Engineer at Raytheon. She earned her BSE in 2002, and her Ph.D in 2007, both from Arizona State University in Materials Science Engineering. She has also been the chair of the Governance Board and Executive Committee for America Makes (the National Additive Manufacturing Innovation Institute). Previously at Raytheon she has held the role as Corporate Technology Area Director for Mechanical, Materials, and Structures as well as Value Stream Manager. She has also been a Graduate Research Assistant at Arizona State University, a Graduate Intern at Sandia National Laboratories and a Undergraduate Intern at Motorola Semiconductor Corp. Dr. Clement has several patents to her name.

Amit Goyal

Member

Amit Goyal [NAE] is the director of the RENEW Institute and SUNY Empire Innovation Professor at the University at Buffalo, The State University of New York (UB). Dr. Goyal has over 25 years of project management and administrative experience as principal investigator in managing technical projects of a diverse nature and involving multiple organizations. Dr. Goyal concurrently holds the title of SUNY Empire Innovation Professor at UB in several departments at the University. He is also the president and CEO of TapeSolar Inc., a private-equity funded company, and also the president and CEO of TexMat LLC, an IP holding and consulting company. Dr. Goyal's research interests include his development of low-cost, high performance, flexible, electrical and electronic devices. He is also interested in 3D self-assembly of controlled nanostructures within device layers for enhanced performance or for deriving new functionalities. Functional areas of particular emphasis include superconducting materials, photovoltaic materials, ferroelectric materials, multiferroic materials, and two dimensional materials. A significant emphasis is on microstructurally engineered materials for via controlled synthesis using scalable approaches. His focus is also on energy and environmental materials. He is presently an emeritus corporate fellow at UT-Battelle/Oak Ridge National Laboratory (ORNL). He is also a Battelle Distinguished Inventor. He was the chair of the

UT-Battelle/ORNL Corporate Fellows Council that advised ORNL senior management on scientific and technological issues and opportunities. He has experience as president, CEO, and financial head, as well as experience in interacting with private equity firms such as venture capital firms and angel investors. He has authored more than 350 technical publications and has 87 issued patents comprising 70 U.S. and 17 international patents, and over 20 patents pending.

He is a member of the National Academy of Inventors (NAI). He has been elected fellow of eight professional societies: the American Association for Advancement of Science; the Materials Research Society; the American Physical Society; the World Innovation Foundation; the American Society of Metals; the Institute of Physics; the American Ceramic Society, and the World Technology Network. Dr. Goyal received a B.Tech. (Honors) in metallurgical engineering from the Indian Institute of Technology, Kharagpur (India) in 1986, a M.S. in mechanical and aerospace engineering from the University of Rochester in 1988, and a Ph.D. in materials science and engineering from the University of Rochester in 1991. He also has executive business training from the Sloan School of Management at Massachusetts Institute of Technology (2005), an executive M.B.A. from Purdue University (2002), and an international executive M.B.A. from Tilburg University (2002).

Julia Greer

Member

Julia Greer is a Professor of Materials Science, Mechanics, and Medical Engineering at the California Technical Institute. Prior to starting her appointment as a faculty member at Caltech in June of 2007, Julia was a post-doctoral fellow at PARC, Palo Alto Research Center, from August of 2005 until May of 2007. In order to broaden her expertise, she worked on investigating the behavior of organic semiconductor - thin film transistors (OTFTs) as well as nano-ink-derived metals for jet-printing in flexible electronics. Her research group at Caltech works on multi-functional materials and devices, material synthesis, mechanics of hierarchical architectures, energy storage, additive nano-manufacture, and the mechanics and physics of nanomaterials. Dr. Greer has numerous awards, including the Kavli Early Career Award (MRS, 2014), ACS Nano Letters Young Investigator Award and Lectureship (2013), the Materials, Metals, and Minerals Society (TMS) Early Career Faculty Award (2013), the Society of Engineering Science (SES) Young Investigator Award (2013), Popular Mechanics Breakthrough Award (2012), and many others. She earned her B.S. in Chemical Engineering (1997) from Massachusetts Institute of Technology, and her M.S (2000) and Ph.D. (2005) in Materials Science and Engineering from Stanford University.

Satyandra K. Gupta

Member

Satyandra K. Gupta holds Smith International Professorship in the Aerospace and Mechanical Engineering Department and the Department of Computer Science in the Viterbi School of Engineering at the University of Southern California. He is the founding director of the Center for Advanced Manufacturing at the University of Southern California. His research interests are computer-aided design, physics-informed artificial intelligence, computational foundations for decision making, human-centered manufacturing automation, and robotics. He is developing smart robotic assistants for a wide variety of manufacturing applications such as assembly, composite prepreg layup, kitting, finishing, inspection, and machine tending. He is also developing robotic cells for multiscale additive manufacturing of multifunctional structures. Previously, he was a Professor in the Department of Mechanical Engineering and the Institute for Systems Research at the University of Maryland. He was the founding director of the Maryland Robotics Center and the Advanced Manufacturing Laboratory at the University of Maryland. He also served as a Program Director for the National Robotics Initiative at the National Science Foundation from September 2012 to September 2014. He has published more than four hundred technical articles in journals, conference proceedings, and edited books.

He is a fellow of the American Society of Mechanical Engineers (ASME), Institute of Electrical and Electronics Engineers (IEEE), Society of Manufacturing Engineers (SME), and Solid Modeling Association (SMA). He serves as the Editor-in-Chief of the ASME Journal of Computing and Information Science in Engineering and the Editor-in-Chief for the Advanced Manufacturing Book Series by World Scientific Publishing Company. He has received numerous honors and awards for his scholarly contributions. Representative examples include a Young Investigator Award from the Office of Naval Research, CAREER Award from the National Science Foundation, Presidential Early Career Award for Scientists and Engineers, Invention of the Year Award from the University of Maryland, Kos Ishii-Toshiba Award from ASME, Excellence in Research Award from ASME Computers and Information in Engineering Division, and Design Automation Award from ASME.

He was named “the 20 most influential professors in smart manufacturing” by Smart Manufacturing Magazine in June 2020. The Viterbi School of Engineering gave him Use-Inspired Research Award for creating solutions that address the US aerospace and defense industry’s needs in the advanced manufacturing area. He has also received ten best paper awards at international conferences.

He earned a Ph.D. in Mechanical Engineering from the University of Maryland. He has served as a member of the Autonomy Summer Study Task Force for the Defense Science Board. He also serves as a member of the Technical Advisory Committee for Advanced Robotics for Manufacturing (ARM) Institute. He is a member of Forbes Technology Council.

Thomas R. Kurfess

Member

Thomas R. Kurfess [NAE] is the HUSCO/Ramirez Distinguished Chair in Fluid Power and Motion Control and Professor of Mechanical Engineering at Georgia Tech. During 2019-2021 he was on leave serving as the Chief Manufacturing Officer and the Founding Director for the Manufacturing Science Division at Oak Ridge National Laboratory, where he was responsible for strategic planning in advanced manufacturing. During 2012-2013 he was on leave serving as the Assistant Director for Advanced Manufacturing at the Office of Science and Technology Policy in the Executive Office of the President of the United States of America. In this position he had responsibility for engaging the Federal sector and the greater scientific community to identify possible areas for policy actions related to manufacturing. He was responsible for coordinating Federal advanced manufacturing R&D, addressing issues related to technology commercialization, identifying gaps in current Federal R&D in advanced manufacturing, and developing strategies to address these gaps. He was President of the Society of Manufacturing Engineers in 2018, and currently serves on the Board of Governors of the ASME. His research focuses on the design and development of advanced manufacturing systems targeting secure digital manufacturing, additive and subtractive processes, and large-scale production enterprises. Kurfess is a member of the National Academy of Engineering and is a Fellow of ASME, AAAS, and SME. He received his S.B., S.M. and Ph.D. degrees in mechanical engineering from M.I.T. in 1986, 1987 and 1989, respectively. He also received an S.M. degree from M.I.T. in electrical engineering and computer science in 1988.

Y. Shirley Meng

Member

Shirley Meng is a Professor of Molecular Engineering at the Pritzker School of Molecular Engineering. She serves as the Chief Scientist for Argonne Collaborative Center for Energy Storage Science (ACCESS) at Argonne National Laboratory. Dr. Meng's research focuses primarily on energy storage materials and systems – including rechargeable batteries for electric vehicles and trucks, power sources for Internet of Things (IOTs), as well as grid-scale storage for deep renewable energy penetration. Meng has led the development of liquefied gas electrolytes, allowing for a new class of battery that can operate at -112°F, the technology led to the startup South 8 Technologies.

Her work pioneers in discovering and designing better materials for energy storage by a unique combination of first principles computation guided materials discovery and design, and advanced characterization with electron/neutron/photon sources. Dr. Meng is the principal investigator of the Laboratory for Energy Storage and Conversion (LESC). She received several prestigious awards, including the Faraday Medal of Royal Chemistry Society (2020), International Battery Association Battery IBA Research Award (2019), Blavatnik Awards for Young Scientists Finalist (2018), C.W. Tobias Young Investigator Award of the Electrochemical Society (2016), Science Award Electrochemistry by BASF and Volkswagen (2014) and NSF CAREER Award (2011). Dr. Meng is the elected Fellow of Electrochemical Society (FECS), elected Fellow of Materials Research Society (FMRS) and Fellow of American Association for the Advancement of Science (AAAS). She serves as the Editor-in-Chief for Materials Research Society MRS Energy & Sustainability Journal.

Dr. Meng received her Ph.D. in Advanced Materials for Micro & Nano Systems from the Singapore-MIT Alliance in 2005, and her bachelor's degree with first class honor from Nanyang Technological University, Singapore in 2000. She worked as a postdoctoral research fellow and became a research scientist at MIT from 2005-2007. Soon after her tenure at University of California San Diego (UCSD), she founded the Sustainable Power & Energy Center in 2015 and became the inaugural director of the Institute for Materials Discovery and Design in 2019. Dr. Meng was Zable Endowed Chair Professor in Energy Technologies at UCSD (2016-2021) before joining PME at University of Chicago.

Omkaram Nalamasu

Member

Omkaram (Om) Nalamasu [NAE] is senior vice president and chief technology officer (CTO) of Applied Materials, Inc. He brings extensive experience and passion to the role of CTO, where he leads the development of disruptive products to address new and adjacent markets and businesses in partnership with the broader technology ecosystem. He has built a world-class team to support Applied's leadership in materials engineering.

He also serves as president of Applied Ventures, LLC, the venture capital fund of Applied Materials, where he oversees strategic investments in early- and growth-stage companies. A world-renowned expert in materials science and one of our industry's most respected forward-thinkers, Dr. Nalamasu has championed a renewed focus on Applied's global innovation culture through various internal development programs and open innovation methods. He has solidified strategic relationships with universities, government organizations and research institutes around the world. Dr. Nalamasu joined Applied in 2006 after serving as an NYSTAR Distinguished Professor of materials science and engineering at Rensselaer Polytechnic Institute, where he also served as vice president of research. He has held key research and development leadership positions at AT&T Bell Laboratories, Bell Laboratories/Lucent Technologies, and Agere Systems, Inc., and was director of Bell Laboratories' Nanofabrication Research Laboratory, MEMS and Waveguides Research, and Condensed Matter Physics organizations. His research interests include nanomanufacturing, nanopatterning, electronic and photonic materials, and lithography, with special emphasis on applying patterning and materials expertise for device fabrication for electronics, photonics and energy applications.

Dr. Nalamasu has made seminal contributions to the fields of optical lithography and polymeric materials science and technology. He has received numerous awards, authored more than 180 papers, review articles and books, and holds more than 120 worldwide issued patents. He is an IEEE Fellow and member of U.S. National Academy of Engineering. He is a member of the board of directors of The Tech Museum in Silicon Valley, Global Semiconductor Association, GCV (Global Corporate Ventures) Leadership Society, The CNBC Technology Executive Council and Commissioner of Innovation, US Council on Competitiveness, and serves on several national and international advisory boards. He received his Ph.D. from the University of British Columbia, Vancouver, Canada.

Thomas W. Prete

Member

Thomas W. Prete is Program Chief Engineer, Military Engines at Pratt & Whitney, East Hartford. He joined Pratt & Whitney in 1989 as a Senior Thermodynamic Performance Engineer and progressed through managerial, engineering and operational roles of increasing leadership and responsibility leading up to his current position. He is responsible for the safety, airworthiness, life management, product improvements and technology insertion of engines powering such front-line military aircraft as the F-16, F-15, EA6B, B-52, C-17 and F-22 Raptor. His career milestones include his successful leadership of efforts to resolve complex burner stability and augmentor ignition issues on the world's most advanced fighter engine, the F119, and completion of a \$20 million global repair development program that initiated thousands of repairs for competitor engines. He has one patent pending and is the recipient of numerous awards, including the Pratt & Whitney William G. Chamberlain Military Customer Service Award for Outstanding Customer Support ('03), the Pratt & Whitney/ASME Outstanding Engineer of the Year award (2000), the Pratt & Whitney Special Award for Significant Contributions ('98, '02 and '03), and the U.S. Navy NAVAIR Commanders Award ('02). Mr. Prete received his M.S. degree from the University of Bridgeport and his executive MBA from the University of Connecticut.

Stanley Rendon

Member

Stan Rendon is the R&D Vice President for 3M's Corporate Research Process Laboratory. Stan leads a global team focused on applying science and engineering to create differentiated, world-class process technology solutions aligned to 3M Division and Business Group opportunities that ultimately solve customer and end-user focused needs. Stan began his career at 3M when he joined 3M's Corporate Research Laboratory (CRL) where he worked on broadening the reach of precision molding, film and microreplication technologies into key market spaces such as Drug Delivery, Occupational Health and Personal Safety, and LED Illumination. Over the course of his 19-year career, Stan has held a range of leadership roles of increasing responsibility in CRL, Divisional R&D, Application Engineering and at 3M's Business Group Level. Stan has been recognized as one of 3M's top innovation leaders with four business-level Circle of Technical Excellence & Innovation awards and one at 3M's corporate-level. He was part of the NAE Frontiers of Engineering class of 2008 as a sole 3M-invitee. He is currently an active member of Northwestern University's Chemical and Biological Engineering Industrial Advisory Board and member of AIChE's Corporate Council and Industry Leaders forum. Stan holds a Bachelor of Science in Chemical Engineering from the University of Minnesota and master's and PhD degrees in Chemical Engineering from Northwestern University.

John D. Russell

Member

Dr. John Russell of Fives, Inc. is the Vice President-Business Development for Defense. He identifies opportunities and builds relationships across the defense industrial base for factory equipment needs such as automated fiber placement, material removal, automation, and additive manufacturing. He also develops partnerships with universities, consortia, and federal research laboratories to advance the state of the art in manufacturing equipment to bring value to the DoD and the aerospace industry. Prior to Fives, John retired after a 34 year career at the US Air Force Research Laboratory. As Chief of the Structures Technology Branch from 2020-2023, he led the strategy development and execution of R&D programs in structural design for future military aircraft. Prior to that he served in a variety of leadership roles in the Manufacturing and Industrial Technologies Division. John is a Fellow of SME and The Air Force Research Laboratory. He led the relaunch of SME's Composites Technical Community and currently serves on the SME Board of Directors. John has a Doctor of Science degree from Washington University in St. Louis.

Michelle Schwalbe

Staff Officer