

Logistics and Manufacturing Under Attack: A Workshop

Committee

Angus Kingon

Chair

ANGUS KINGON (Chair) is the Barrett Hazeltine University Professor of Entrepreneurship and Organizational Studies at Brown University and a professor in the School of Engineering. He has held these positions since 2008. He is also the Academic Director of the IE Brown Executive MBA and the co-director of the Innovation Management and Entrepreneurship Program. Before joining Brown, Kingon was a professor in the Department of Material Science and Engineering at North Carolina State University and the Executive Director of Technology Commercialization Programs at the College of Management. Kingon has authored or co-authored over 300 refereed papers and has had 15 patents granted in 13 countries. His research interests are; electronic thin films, functional oxide and halide films, materials processing science, piezoelectric, ferroelectric and dielectric thin materials, X-ray detectors, hybrid electronic devices, sensors and actuators, technology entrepreneurship and technology commercialization, entrepreneurship teaching methodologies.

David E. Aspnes

Member

DAVID ASPNES [NAS] is a Distinguished University Professor and member of the Department of Physics at North Carolina State University. His formal education includes B.S. (1960) and M.S. (1961) degrees in electrical engineering from the University of Wisconsin-Madison and a Ph.D. (1965) in physics from the University of Illinois at Urbana-Champaign. He joined the North Carolina State University Physics Department in 1992 as a full professor and was made a Distinguished University Professor in 1999. He was elected as a member of the National Academy of Sciences in 1998. His principal research interests have focused on optical spectroscopy, semiconductor physics, and surface physics. His contributions include the discovery, elucidation, and development of low-field electrodielectricity for high-resolution spectroscopy of semiconductors and the determination of their band structures; the development and application of spectroscopic ellipsometry to surfaces, interfaces, thin films, and bulk materials; and the development and application of reflectance-difference spectroscopy to real-time analysis of epitaxial growth. His current research activities are directed toward nondestructive analysis of surfaces and interfaces, and in particular the real-time diagnostics and control of semiconductor epitaxy by organometallic chemical vapor deposition. Dr. Aspnes has published over 400 papers and has been granted 23 patents.

Dianne Chong

Member

DIANNE CHONG [NAE] is the retired vice president of Materials Assembly, Factory and Support Technology, an organization within Boeing Research and Technology, which is the company's central research and development unit. Dr. Chong's team provided materials and processes engineering and manufacturing support for Boeing, including the company's two major business units: Boeing Commercial Airplanes and Boeing Defense, Space and Security. Her team is responsible for providing non-destructive evaluation for programs such as the Boeing 787 Dreamliner. In addition, her organization researches and develops advanced assembly and integration concepts. Dr. Chong supports many professional societies and serves on several university boards and industry committees. She is a member TMS, AIAA, ASM International, SME, SWE, Beta Gamma Sigma, and Tau Beta Pi and is a commissioner to the Accreditation Board for Engineering and Technology (ABET). In 2010, she was presented with the Asian-American Executive of the Year Award by the Chinese Institute of Engineers, USA. An expert in metallurgical engineering, she holds a Ph.D. and master's degree in metallurgical engineering, and bachelor's degrees in biology and psychology from the University of Illinois at Urbana-Champaign. She also holds of an executive master's degree in Manufacturing Management from Washington University, and in 2017 she was elected to the National Academy of Engineering.

Andrea M. Hodge

Member

ANDREA MARIA HODGE is the Arthur B. Freeman Professor and a professor of the department off chemical engineering and materials science as well as the department of aerospace and mechanical engineering. She is also the chair of the Mork Family Department of Chemical Engineering and Materials Science at University of Southern California. Dr. Hodge joined USC Viterbi as an assistant professor in 2007. She received her Ph.D. in materials science in 2002 from Northwestern University. During 2016-2020 she served as vice provost for undergraduate programs at USC. Dr. Hodge also concurrently serves as co-director for the Core Center of Excellence in Nano Imaging (CNI). Previously she was at Lawrence Livermore National Laboratory as a staff scientist, and at NASA Glenn Research Center working with technology transfer. Dr. Hodge has co-authored over 90 peer-reviewed publications and two book chapters and she is the recipient of several national research awards including an NSF CAREER Award, an ONR Young Investigator Program (YIP) Award and a DARPA Young Faculty Award (YFA).

Robert Hull

Member

ROBERT HULL is the head of the Materials Science and Engineering Department and the Henry Burlage Professor of Engineering at Rensselaer Polytechnic Institute. Prior to that he spent about a decade at Bell Laboratories in the Physics Research Division, and twelve years at the University of Virginia, where he was the director of an NSF MRSEC Center and director of the UVA Institute for Nanoscale and Quantum Science. He received his Ph.D. in materials science from Oxford University in 1983. Hull is highly active in engineering and materials science societies and professional groups. He is a fellow of the American Physical Society and of the Materials Research Society, and in 1997 served as president of the Materials Research Society. He has also chaired a Gordon Research Conference on Thin Films, and chaired the Committee of Visitors for the National Science Foundation's Division of Materials Research. Within the realms of materials and nanoscience, Hull's research focuses on the relationships between structure and property in electronic materials, fundamental mechanisms of thin film growth, and the self-assembly of nanoscale structures. Other areas of interest include degradation modes in electronic and optoelectronic devices, the properties of dislocations in semiconductors, nanoscale fabrication techniques, nanoscale tomographic reconstruction techniques, development of new nanoelectronic architectures, and the theory and application of electron and ion beams.

John J. Koszewnik

Member

JOHN JOSEPH KOSZEWNIAK [NAE] is the retired chief technical officer for the company Achates Power where his team has been responsible for the design and development of advanced diesel and gasoline opposed piston internal combustion engines. Among these is the Advanced Combat Engine (ACE) that is being jointly developed with Cummins, providing a leap-ahead capability in power density, fuel efficiency, and low heat rejection for the U.S. Army Ground Combat Fleet. Initial tests in the Bradley fighting vehicle are planned as pathways to the Next Generation Combat Vehicle. Prior to joining Achates Power in 2011, Koszewnik worked at Ford Motor Co., for 30 years, most recently as director of North American Diesel where he led engineering and business responsibilities for Ford diesel offerings within North America. Prior to that assignment Koszewnik was responsible for forward model engine engineering of all Ford's gasoline V6, V8, and V10 engines leading an organization of approximately 1200 employees. Koszewnik held a variety of other assignments while at Ford, including Manager of Worldwide Product Strategy and Manager of North American Marketing Product Plans. Following his distinguished career at Ford, Koszewnik was senior vice president of construction equipment product development at Case New Holland, where he managed 10 engineering centers worldwide and 650 employees. Additionally, he was director of production development at FEV Inc., an engineering services and consulting company, responsible for ensuring achievement of all functional requirements, quality, cost, and timing of production programs. He also supported product development and strategic study projects for the automotive, heavy truck, locomotive, and powertrain component supply industries. Koszewnik earned a bachelor's degree in engineering from Stevens Institute of Technology and a MBA from Harvard University. He is a member of the National Academy of Engineering, elected in 2016 based on his past and present work in engine design.

Thomas R. Kurfess

Member

THOMAS KURFESS [NAE] is the Chief Manufacturing Officer at the Manufacturing Demonstration Facility at Oak Ridge National Laboratory. Previously he was the BMW Chair in Manufacturing and a Professor in the Campbell Graduate Engineering Center at Clemson University. His current research focuses on the control of precision grinding systems that involve the development and implementation of adaptive controllers for precision grinding operations, including bore grinding, through feed centerless grinding, and surface grinding. Ultrarigid machine tools with open architecture controls are employed. The results of this work are used in a number of industrial environments. His project on precision measurement involves the use of coordinate measurement machines to verify part geometry in three dimensions. Currently, the metrology systems developed in this project are being used in the verification of parts on actual production lines. Dr. Kurfess is a fellow of the American Society of Mechanical Engineers, and has received both the Presidential Faculty Fellowship and the Presidential Young Investigator Award from the National Science Foundation. He received his Ph.D. from the Massachusetts Institute of Technology and he is a member of the National Academy of Engineering.

Rosalind Lewis

Member

ROSALIND (ROZ) LEWIS is the Principal Director of the Acquisition and Planning Subdivision at The Aerospace Corporation. In this position, Ms. Lewis manages four departments that provide support to a variety of customers in the areas of system reliability analysis; programmatic analysis and modeling to include cost, schedule and risk analysis; and system engineering and acquisition strategy development support. Ms. Lewis joined The Aerospace Corporation in 1987 as a Member of the Technical Staff in the Computer Science Laboratory, where she developed software tools for experiment mission planning, network scheduling system requirements, and fault tolerant technology. As a program office Senior Project Engineer / Lead, she led a multidisciplinary effort to develop a digital imagery dissemination system, studied the impact of GPS-aided satellite navigation on network resources and supported cross segment systems engineering and integration. In 1999, she joined the RAND Corporation as a Senior Engineer, where she conducted and participated in studies regarding the acquisition, development and use of space systems, including GPS and Galileo; and other studies related to the development and applications of information and communication technologies. Ms. Lewis holds a B.S. degree from USC in Computer Science, a M.S. degree from Polytechnic University in Computer Science, and a M.S. degree in Systems Architecture and Engineering from USC.

Haydn N. Wadley

Member

HAYDN WADLEY is the University Professor and the Edgar A. Starke Professor of Materials Science and Engineering at the University of Virginia in Charlottesville, Virginia. He has very broad interests in materials science, mechanics and thermal transport. His current research explores high temperature thermal protection systems (thermal barrier coatings, liquid metal heat plates for hypersonic vehicle leading edges, jet blast deflectors) and new materials for the mitigation of high intensity dynamic loads (ballistic and blast protection materials and structures). He has addressed many fundamental questions associated with the atomic assembly of nanoscopic materials from the vapor phase, the topological structuring of cellular materials, and the processing of high performance composites. These fundamental studies have been used to develop models and numerical simulations that reveal the linkages between a materials composition/synthesis and its performance. Some of these models have been coupled with in-situ (ultrasonic and electromagnetic) sensors and nonlinear, feedback control algorithms to implement intelligent process control concepts. He has invented and commercialized several vapor deposition technologies that enable the growth of novel thin films and coatings, and numerous multifunctional cellular materials including: those that support stress whilst also serving as impact energy absorbers, heat exchange media, electro-chemical power storage systems, and shape morphing structures. His research group has spun out two companies; these include one that develops novel coatings and another that manufactures high performance cellular materials. He has served on the Defense Science Board's Summer Study, and is a current member of both the Defense Materials, Manufacturing and Infrastructure Committee and the National Materials and Manufacturing Board. He has been a member of the Defense Science Research Council since 1998, and led studies on a wide variety of topics including Jungle Warfare Technology, Exploitation of Space, Counter Ambush Technologies, Blast Injury Mitigation, Novel Concepts for Protection from EFP's, Compact Power Systems, Electrotextiles, Countermeasures to Non Traditional Threat Agents, and Technologies for Stabilization, Reconstruction and Humanitarian Relief Operations. He has published close to 700 papers, co-authored a book on cellular materials, holds 21 U.S. patents, and is a fellow of the American Society for Materials.

Pablo D. Zavattieri

Member

PABLO D. ZAVATTIERI is the Jerry M. and Lynda T. Engelhardt Professor in Civil Engineering, Engineering at Purdue University. Prior to his academic position at Purdue he was a senior/staff researcher at the General Motors Research and Development Center. His research interest is at the intersection of solid mechanics and materials engineering. His contribution to the field of materials have been focused on the structure-function relationship of advanced materials at multiple length-scales, combining state-of-the-art computational techniques and experiments to understand and characterize key mechanisms that contribute to material performance; thus enabling design guidelines for novel materials, including architected/metamaterials, biological and bioinspired materials. Some of his recent work also includes advanced manufacturing applied to infrastructure materials. Dr. Zavattieri received his B.S. and M.S. degrees in Nuclear Engineering from the Balseiro Institute (Argentina) and his Ph.D. in Aeronautics and Astronautics Engineering from Purdue University. He has authored or co-authored over 110 peer-reviewed articles and holds 10 patents. Dr. Zavattieri is member of the editorial board of three journals and has chaired and co-chaired several committees for different organizations. Additionally, Dr. Zavattieri has strong links, commitments and involvement with the Hispanic engineering community. Dr. Zavattieri is the recipient of the NSF CAREER award and was appointed a Purdue University Faculty Scholar among other recognitions. He is a National Academy of Engineering Frontiers of Engineering Alumnus and a National Academy of Science Kavli Frontier of Science Fellow.

Erik B. Svedberg

Staff Officer