

MSEC 2016 – Early Career Forum

Research and Engineering Professions in Academia, Industry and National Laboratories: An Early Career Forum

Organized by AMSE/MED and NAMRI/SME
Sponsored by the National Science Foundation and Virginia Tech

Date/Time/Place:

Thursday, June 30th, 2016, 6:00 – 8:30pm, at Virginia Tech, Blacksburg, Virginia. The forum will be held during the co-located manufacturing conferences: the ASME 2016 International Conference on Manufacturing Science and Engineering (MSEC2016) and the NAMRI/SME 44th North American Manufacturing Research Conference (NAMRC44).

Purpose:

The objective of the Early Career Forum is to educate students engaged in scientific programs around manufacturing on the possible career paths available to them, and details of feasible expectations for activities and future opportunities when following a given career path. This objective will be addressed through a small-scale networking event where manufacturing students are introduced to a panel representing industry, government, and academia. The anticipated benefits of this personal engagement are a better understanding by participants of what to expect from a given career and a path for networking (creating a contact network) for future information sharing.

Agenda (Room # Latham A)

6:00 – 6:05 pm: Opening
6:05 – 6:45pm: 2-3 minute spoken introductions by panelists
6:45 – 8:00 pm: Breakout round-table sessions (15-minute interval encouraged)
8:00 – 8:05 pm: Wrap-up discussion, open questions and answers
8:05 - 8:30 pm: Light reception

Forum format:

- (1) The forum will start with a 2-3 minute spoken introduction by each panelist representing academic, government, and industrial sectors. Speakers will discuss their background, career path, and area of expertise.
- (2) Breakout round-table sessions will immediately follow, and make up the bulk of the interaction. This will let you ask questions to specific panelists, and hear further detail of their experiences and perception of a specific career path.
- (3) At the end, a light reception will be served, offering ample time for participants to continue conversations/discussions related to their particular/personal interests.

Biographies of 2016 Early Career Forum Panelists

Dr. Brad Kinsey, University of New Hampshire

Dr. Brad Kinsey is the Chair and a Professor in the Mechanical Engineering Department and a Professor in the Materials Science Program at the University of New Hampshire. He is also the Director of the UNH Center for Advanced Materials and Manufacturing Innovations (a collection of 25 faculty members across the UNH College of Engineering and Physical Sciences) and the Interim Director of the UNH John Olson Advanced Manufacturing Center. Prof. Kinsey received his Bachelor's degree from the University of Michigan in 1992 and his Master's and Doctoral

degrees from Northwestern University in 1998 and 2001 respectively, in Mechanical Engineering. His awards include Fellow status in the American Society of Mechanical Engineers, Fellow status in the Society of Manufacturing Engineers, a CAREER Award from US National Science Foundation, the Ralph R. Teetor Award from the Society of Automotive Engineers, and the UNH Assistant Professor of the Year Award. In 2013, he served as the Department of Energy Representative to the Advanced Manufacturing National Program Office which coordinates the National Network for Manufacturing Innovation.

Dr. Barbara Linke, University of California Davis

Dr. Barbara Linke got her German Diploma and doctorate in mechanical engineering at the RWTH Aachen University, Germany. She worked with Prof. Fritz Klocke at the Laboratory for Machine Tools and Production Engineering WZL from 2002 – 2010 on grinding technology and tooling engineering. Her PhD thesis in 2007 was about dressing of vitrified bonded grinding tools. From 2010 - 2012, Barbara was a research fellow at the University of California Berkeley at Prof. David Dornfeld's lab with a research grant from the German Research Foundation (DFG). Since November 2012, Barbara has been an assistant professor at the University of California Davis. Her research interests are sustainable manufacturing, abrasive machining technologies, and sustainability of 3D printing. In 2015, she finished her Habilitation at the RWTH Aachen University. Barbara received the F.W. Taylor Medal of the CIRP in 2009 and the Outstanding Young Manufacturing Engineer award of the SME in 2013.

Dr. Bruce Kramer, National Science Foundation (NSF)

Dr. Bruce Kramer is a graduate of the Massachusetts Institute of Technology (S.B., S.M. 1972, Ph.D. 1979). He served on the faculty of Mechanical Engineering at MIT from 1979 to 1985 and of George Washington University from 1985 to 1995. Since 1991, he has been at the National Science Foundation, as Program Director for Materials Processing and Manufacturing, Director of the Division of Design, Manufacture and Industrial Innovation, Director of the Division of Engineering Education and Centers, and coordinator of Nanoscale Science and Engineering Centers for the Directorate for Engineering. He is currently the Senior Advisor for Manufacturing in the Division of Civil, Mechanical and Manufacturing Innovation and the point of contact at the NSF in support of the National Advanced Manufacturing Program.

Dr. Kramer co-founded and was Director of Engineering of Zoom Telephonics of Boston, a NASDAQ company and leading producer of cable and DSL modems and communication products marketed under the Zoom, Motorola, Hayes, Practical Peripherals, and Global Village brands. He is the holder of three U.S. patents.

Professor Kramer was conferred the rank of Fellow of the School of Engineering at the University of Tokyo in 2007. He has also been awarded the F.W. Taylor Medal of the International Institution for Production Engineering Research, the Blackall Award of the American Society of Mechanical Engineers and the R.F. Bunshah Medal of the International Conference on Metallurgical Coatings, all in recognition of outstanding contributions to the manufacturing research literature, and the Distinguished Service Award, the highest honorary award granted by the National Science Foundation. He is a fellow of the Society of Manufacturing Engineers.

Dr. George Hazelrigg, National Science Foundation (NSF)

Dr. George Hazelrigg, enjoyed designing and building things when he was young, so he decided to go to college to study engineering. He obtained a BS in mechanical engineering from Newark College of Engineering (now New Jersey Institute of Technology) and went to work for Curtiss-Wright. There, he found that his education had utterly destroyed his abilities to do engineering design. So he felt it necessary to get a master's degree. He completed an MS in mechanical engineering, also from NCE, but still hadn't regained his design abilities. While getting his MS, however, he did some teaching and liked it. So he figured that, if he couldn't do design, the next best thing would be to teach it. Five years later, he had obtained MA, MSE, and PhD degrees in aerospace engineering from Princeton University. Now, in addition to not knowing how to do design, he couldn't teach it either. For the next 25 years, he roamed industry and academe in an

attempt to understand the theory of engineering design, including time spent at the Jet Propulsion Laboratory, General Dynamics, Princeton University and a consulting firm of which he was a co-founder. He also spent a year in Korea helping to found the Systems Engineering Department of Ajou University. He joined the National Science Foundation in 1982 and, in 1996, became program director for the Engineering Design program where, for eight years, he provided support to others in the field. In January, 1996, he did a stint as Station Science Leader of the U.S. South Pole station. In 2004, he became Program Director for the Manufacturing Machines and Equipment program and, since the formation of the CMMI Division, he has been Deputy Division Director. More recently, he became Program Director of the Sensors and Sensing Systems program. For relaxation, he spends his weekends soaring over the Shenandoah Valley, and he is a certified flight instructor in gliders (CFI-G) with about 1,800 total flying hours.

Dr. Ihab Ragai. Penn State University

Dr. Ihab Ragai is an Assistant Professor of Engineering at the Penn State University, Erie, PA. Prior to joining academia, he was the Senior Engineering Manager of Technical Analysis and Design at Hitachi Truck in Canada, overseeing all projects related to product/process optimization, truck dynamics, fatigue analysis, frame/body design, drive system components design, material selection, and manufacturing processes including casting, forging, welding, and sheet forming. For over 20 years, he has held several positions in industry as Design Engineer, Project Engineer, Senior Project Engineer, and Project Manager. Ihab worked on several projects with ABB Germany, McDonnell Douglas Aerospace USA, Pratt & Whitney Canada, Canada Network of Centres of Excellence (AUTO21), and Canadian Institute of Aerospace Research. His areas of expertise are finite element analysis, material characterization, stress analysis, design of aerospace and automotive components and systems, and manufacturing processes. He earned a Bachelor's degree in Manufacturing Engineering, a Master's degree in Mechanical Design, and a Ph.D. degree in Mechanical Engineering. He was educated in Egypt, Germany, the US and Canada. Ihab is a registered Professional Engineer in the province of Ontario, Canada. He is a recipient of several national and international awards in the field of mechanical engineering.

Dr. Jingjing Li. Penn State University

Dr. Jingjing Li will join the Harold and Inge Marcus Department of Industrial and Manufacturing Engineering at Penn State University as an associate professor in July, 2016. She has been an assistant professor in the Department of Mechanical Engineering at University of Hawaii since 2011. Jingjing received Bachelor's degree from Beijing University of Aeronautics and Astronautics, China, in 2002, and Master's degree in Materials Science and Engineering from Tsinghua University, China, in 2005. She earned her Master's degree in Statistics in 2010 and Ph.D. in Mechanical Engineering in 2011, both from the University of Michigan. She was selected as an NSF CAREER awardee in 2016, based on her research proposal titled "CAREER: Surface Interactions in Dissimilar Material Joining." She was a guest editor for the ASME Journal of Manufacturing Science and Engineering, served on NSF panels, organized the 9th International Workshop on Microfactories (IWMF 2014), and has served as symposium chairs for ASME International Manufacturing Science and Engineering Conferences (MSEC) since 2013. Her primary research interest focuses on materials processing and characterization, particularly on novel methodologies for multi-scale material characterization, mechanical behavior, failure analysis, and effect of microstructure on macroscopic properties.

Dr. Mary M. Toney. National Science Foundation (NSF)

Dr. Toney is a Program Officer for the Materials Engineering and Processing (MEP) program and the Design of Engineering Materials Systems (DEMS) program in the division for Civil, Mechanical and Manufacturing Innovation (CMMI) at the National Science Foundation (NSF). In addition to her program responsibilities, she is involved in numerous committees at the agency for initiatives such as CAREER, a national Manufacturing Innovation Institute, and support for the National Science Board.

Prior to NSF, she was the Director of Research for Albany International where she had been employed for more than 20 years. Her research interests while at Albany International centered around the mechanical behavior of polymeric materials, primarily in fiber form. Dr. Toney pioneered the use of computer modeling in industrial textiles, using modeling tools to explore the dewatering process during papermaking. She has served on the Water Removal Committee for the Technical Association for the Paper and Pulp Industry, the Research Advisory Committee for the Institute for Paper Science and Technology and is a past president of the Fiber Society. Dr. Toney earned her Ph.D. in Fiber Science at Cornell University and her M.S. in Mechanical Engineering at the Massachusetts Institute of Technology. She has authored four patents as well as numerous publications and professional presentations.

Dr. Moneer Helu, National Institute of Standards and Technology (NIST)

Dr. Moneer Helu is a mechanical engineer and associate project leader in the Engineering Laboratory at the National Institute of Standards and Technology (NIST). He is also the Co-Leader of the NIST Smart Manufacturing Systems Test Bed. His current research focus is in developing the digital thread to enable and support diagnostics, prognostics, and control for smart manufacturing systems, particularly for those systems on the shop floor. He is a member of the Technical Steering Committee and Technical Advisory Group for MTConnect and a Corporate Member of the International Academy for Production Engineering (CIRP). Prior to joining NIST in 2014, he was the Associate Director of the Laboratory for Manufacturing and Sustainability and a Lecturer in the Department of Mechanical Engineering at UC Berkeley. He received his S.B. from MIT and M.S. and Ph.D. from UC Berkeley and has been recognized by SME in the 2014 list of the “30 Under 30: Future Leaders of Manufacturing.”

Ms. Natalie Nowel, Society of Manufacturing Engineers (SME)

Dr. Ping Guo, Chinese University of Hong Kong

Dr. Ping Guo received his B.S. degree in Automotive Engineering from Tsinghua University in 2009. He received his Ph.D. degree in Mechanical Engineering from Northwestern University in 2014. He then joined the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong as an assistant professor in August, 2014. His research interests center on the paradigm of micro-manufacturing, including surface texturing, process micro-mechanics, miniature machine tools, micro-additive manufacturing, etc.

Dr. Shawn Moylan, National Institute of Standards and Technology (NIST)

Dr. Shawn Moylan is a mechanical engineer and a project leader in the Engineering Laboratory at the National Institute of Standards and Technology (NIST), where he has worked on a variety of projects in manufacturing metrology, including measurement science for additive manufacturing and smart machine tools. He was the 2012 recipient of the SME Outstanding Young Manufacturing Engineer award. Shawn has successfully completed the “Building the Next Generation” leadership development program at NIST; his PhD is from Purdue.

Dr. Wayne Cai, General Motors Global R&D Center in Warren

Dr. Wayne Cai is a Staff Researcher at General Motors Global R&D Center in Warren, Michigan, USA. His research area is in joining and assembly where mechanics, materials, and mathematics (statistics) are used to optimize, monitor & control manufacturing processes and systems for improved quality, reliability and reduced cost. He has been a project leader, principle investigator and supervisor for a number of industrial, and/or governmental/university collaborative research programs. He is well-recognized for his innovativeness with twenty-six US and international patents (or patent pending) and numerous GM trade-secrets inventions. Dr. Cai is very active in contributing to world-wide knowledge and higher education by authoring over seventy peer-reviewed research papers and supervising Master and Ph.D. students. He also serves as an Associated Editor for ASME Journal of Manufacturing Science and Engineering, SME Journal of

Manufacturing Processes, chair of SAE Hybrid Electric Powertrain Committee, and guest professor at Shanghai Jiaotong University (China). Dr. Cai received his B.S, M.S., and Ph.D. degrees from The University of Science and Technology of China, The University of Iowa, and The University of Michigan, all in Mechanical Engineering.

Dr. ZJ Pei. National Science Foundation (NSF)

Dr. Z.J. Pei received his PhD in Mechanical Engineering from University of Illinois at Urbana-Champaign. He had worked as a post-doc for a year and in industry (as process engineer, mechanical engineer, research scientist, and applications engineer in four companies) for four years before joining Kansas State University where he is currently a professor. Since August 2012, he has been serving as the program director of the Manufacturing Machines and Equipment program at National Science Foundation. He has graduated 12 PhD and 6 MS students. Among his 12 graduated PhD students, 6 are currently faculty members (4 in U.S. and 2 in China). All of the 4 U.S. faculty members have received NSF awards (including one CAREER award). ZJ is an ASME Fellow and SME Fellow.

Fee: Free for conference participants

Attendance: **Mandatory for NSF Travel Grant student applicants**

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