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

Organized by: ASME/MED, NAMRI/SME, and JSME

Sponsored by: National Science Foundation (http://nsf.gov/)

Hosted by: University of Southern California

Date/Time/Place: Wednesday, June 7th, 2017, 5:00 – 8:00pm, at the University of Southern California, Los Angeles, United States. The forum will be held during the co-located manufacturing conferences: the ASME 2017 International Conference on Manufacturing Science and Engineering (MSEC2017), NAMRI/SME 45th North American Manufacturing Research Conference (NAMRC45), and JSME 2017 International Conference on Materials and Processing (ICM&P2017).

Purpose: The goal of this forum is to provide current students at all levels of graduate and undergraduate programs as well as recent graduates with better information/knowledge of various research positions in industry, academia, and national laboratories. The forum will further discuss how to be successful professionally in the various research settings.

Agenda (Wednesday, June 7th, 2017)

17:00 – 17:15: Opening Remarks and Welcome
17:15 – 18:00: 5-minute spoken introduction by each panelist
18:00 – 18:15: Pizza and beverages served
18:15 – 19:30: Breakout panel discussions
   • Panel 1: Academia
   • Panel 2: Government
   • Panel 3: Industry
19:30 - 20:00: Wrap-up discussion, open questions and answers

Forum Format:
1. Each panelist will introduce themselves in approximately 5 minutes each. They have experience conducting research in academia, industry, and government labs.
2. Round-table discussions (parallel) will follow: one for academia, one for government and the other for industry. The round-table discussions will each have 3 panelists from diverse background/positions. Panelists will discuss such topics as how to search for a job, career management, funding for research, etc.
3. Food and beverages will be served during the forum.
4. After the forum participants are encouraged to engage in conversations/discussions related to their particular/personal interests.

Fee: Free for registered conference participants

Attendance:
   • Open to all registered conference participants
   • Mandatory for NSF Travel Grant* student applicants

* Any student enrolled full-time at a U.S. college or university is eligible to apply for an NSF Travel Grant.

Early Career Forum Chair:
Dr. Frank Pfefferkorn
University of Wisconsin-Madison
Phone: 608-263-2668
Email: frank.pfefferkorn@wisc.edu
Panelists:

**Dr. Kira Barton, University of Michigan Ann Arbor**

Kira Barton is an Assistant Professor in the Department of Mechanical Engineering at the University of Michigan. She received her B.Sc. in Mechanical Engineering from the University of Colorado at Boulder in 2001. Following her B.Sc., Kira worked as a well control engineer for British Petroleum in Alaska, and then as an Engineer I for the Woods Hole Oceanographic Institution in Massachusetts. In 2004, she continued her education in mechanical engineering at the University of Illinois at Urbana-Champaign and completed her M.Sc. and Ph.D. degrees in 2006 and 2010, respectively. She held a postdoctoral research position at the University of Illinois from Fall 2010 until Fall 2011, at which point she joined the Mechanical Engineering Department at the University of Michigan at Ann Arbor. Kira conducts research in modeling, sensing, and control for applications in advanced manufacturing and robotics, with a specialization in Iterative Learning Control and micro-additive manufacturing. Kira is the recipient of an NSF CAREER Award in 2014, 2015 SME Outstanding Young Manufacturing Engineer Award, the 2015 University of Illinois, Department of Mechanical Science and Engineering Outstanding Young Alumni Award, and the 2016 University of Michigan, Department of Mechanical Engineering Department Achievement Award.

**Dr. Wayne Cai, General Motors Global R&D**

Dr. Wayne Cai is a Staff Researcher at General Motors Global R&D Center in Warren, Michigan, USA. His research area is advanced manufacturing technology, where mechanics, materials, and mathematics (statistics) are used to optimize manufacturing processes and systems for improved quality, reliability and reduced cost. He is well-recognized for his innovation in automotive technologies, particularly li-ion battery design and manufacturing technologies, with over thirty US and international patents (or patent pending) and a number of GM trade-secrets inventions. He authored over seventy peer-reviewed research papers, one book on li-ion battery manufacturing, and is a frequently invited speaker at a variety of industrial and academic forums.

Dr. Cai is currently Chair of SAE Hybrid Electric Vehicle Committee, Vice Chair of ASME Manufacturing Process Technical Committee, Associated Chair of North American Manufacturing Research Institute. He also serves as an Associate Editor for ASME Journal of Manufacturing Science and Engineering and SME Journal of Manufacturing Processes. Dr. Cai received his Ph.D. degree from The University of Michigan.

**Dr. Moneer Helu, National Institute of Standards and Technology**

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. Moneer’s current research focus is in the areas of monitoring, diagnostics, prognostics, and control for smart manufacturing systems. He is a member of the Technical Steering Committee and Technical Advisory Group for MTConnect, the Manufacturing Engineering Division of ASME, and the Scientific Committee of the SME North American Manufacturing Research Institute. He is also a Corporate Member of the International Academy for Production Engineering (CIRP). Prior to joining NIST in 2014, Moneer was the Associate Director of the Laboratory for Manufacturing and Sustainability (2014) and a Lecturer and Postdoctoral Researcher (2013-2014) in the Department of Mechanical Engineering at UC Berkeley. He received his Ph.D. (2013) and M.S. (2009) in Mechanical Engineering from UC Berkeley and S.B. (2007) in Mechanical Engineering from MIT. He has been recognized by SME in the 2014 list of the “30 Under 30: Future Leaders of Manufacturing.”

**Dr. Arif Malik, University of Texas Dallas**

**Dr. Laine Mears, Clemson University**

Laine Mears is the BMW SmartState Endowed Chair of Automotive Manufacturing, Professor and founding faculty member in the Automotive Engineering department at Clemson University. He teaches and conducts projects at the Clemson University International Center for Automotive Research. Teaching covers modeling and analysis of automotive manufacturing processes, quality systems and quality tools; research is in manufacturing quality estimation, Intelligent Machining Systems, manufacturing process design and control, and manufacturing equipment diagnostics. He has published over 100 peer-reviewed articles, and is the recipient of the NSF CAREER award, SAE Ralph Teetor Educational Award, the South Carolina Governor’s Young Researcher Award for Excellence in Scientific Research and the IMECE George Stephenson Gold Medal.

Dr. Mears has over 10 years’ industry experience, holding positions with Hitachi Automotive and SKF Bearings both as Manufacturing Engineer and Engineering Manager in a high-volume precision manufacturing environment. Applicable work in industry includes leading quality implementation teams for QS-9000 and ISO-TS-16949 quality systems, power optimization of hard machining processes, and startup of a new bulk deformation rolling process. Dr. Mears has a B.S. in mechanical engineering from Virginia Tech (1993) and M.S. (2001) and Ph.D. (2006) degrees in mechanical engineering from Georgia Tech. He is a Fellow of the American Society of Mechanical Engineers and a Senior Member of both the Society of Manufacturing Engineers and the American Society for Quality. He is an ASQ Certified Quality Engineer (CQE), BMW Lean
Six Sigma Black Belt, and a licensed Professional Engineer.

Dr. Sangkee Min, University of Wisconsin-Madison

Sangkee Min earned his Ph.D. at UC Berkeley with manufacturing major in 2001. His Ph.D. work focused on very practical industrial problems like burr minimization from various machining processes and the outcome of his research was tested and implemented at the automotive and aerospace industry. After his Ph.D., he went to Japan as a special assistant professor at Keio University where he expanded his industrial connection to many Japanese industries; automotive, machine tool, tool makers, oil refinery, etc. with his environmental machining research.

He returned to the US for a venture opportunity that was to fabricate a customized knee surgery assistive device in 2005. He was working as a manufacturing director where he developed a traceable manufacturing system for high mix low volume medical device production. He left the company for another challenge, ultra-precision nano-machining that he considered as emerging and enabling technology. He joined DTL Corporation (Mori Seiki’s US R&D) in 2009 where his team developed an ultra-precision 5-axis nano machine and machining technology.

He started his personal consulting on various subjects on manufacturing from technical process level consulting to global manufacturing strategy and manufacturing policy-making. With strong passion toward manufacturing and growing attention to US manufacturing, he started working for Lawrence Berkeley National Laboratory to assist its manufacturing strategy as a consultant and finally joined as a staff scientist in 2012. At LBNL, he has been working to establish the advanced manufacturing center integrating existing manufacturing excellence and developing new manufacturing technology with an emphasis on ultra-precision machining technology.

From a long history of his manufacturing experience at several countries (US, Japan, Germany, and Korea), he learned that one of key contributors of economic success of one country is keeping manufacturing excellence in the country while maintaining healthy manufacturing ecosystem and proper level of social respect toward manufacturing. He is working to contribute his knowledge and experience to revival of US manufacturing and keeping it sustainable as an assistant professor of Department of Mechanical Engineering at University of Wisconsin-Madison with three major research topics: UPM (Ultra-Precision Machining), SSM (Smart Sustainable Manufacturing), and MFD (Manufacturing for Design).

Dr. Shawn Moylan, National Institute of Standards and Technology

Since 2006, Shawn Moylan has researched measurement science and metrology for advanced manufacturing processes at the National Institute of Standards and Technology (NIST). Currently Shawn is the project leader for Qualification for Additive Manufacturing Materials, Processes, and Parts focusing on developing test methods and reference data to reduce the high costs associated with qualifying critical components for aerospace, medical, and other applications. Prior to working in metals additive manufacturing and 3D printing, Shawn worked in 5-axis machine tool metrology, on-machine measurement of part geometry, smart machine tools, and micro/meso-scale manufacturing.

Shawn received his B.S. in mechanical engineering from the University of Notre Dame and Ph.D. from Purdue University. Shawn is currently on detail assignment in the Advanced Manufacturing National Program Office located at NIST.

Shawn is a leader and active member of the additive manufacturing and advanced manufacturing communities.

- Chair of Executive Committee for ASME Manufacturing Engineering Division (2016-2017, member since 2012)
- Member of Technical Roadmap Advisory Group for America Makes -- the national additive manufacturing innovation institute (2014 - present)
- Member of ASME Technical Advisory Panel on Additive Manufacturing and 3D printing (2016 – present)
- Co-chair of ASPE Spring Topical Meeting -- Achieving Precision Tolerances in Additive Manufacturing (2015, 2016)
- Member of Program Committee for ASME AM3D conference (2016)
- Member of Advisory Committee for SME MicroManufacturing Conference (2008-2011)

Dr. Ihab Ragai, Penn State University

Dr. Ihab Ragai is Assistant Professor of Engineering at the Penn State University, Erie, PA. Prior to joining academia, he was the Senior Engineering Manager at Hitachi Truck in Canada, overseeing all projects related to product/process optimization, truck dynamics, fatigue analysis, structural and 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, Manufacturing Researcher, Project Engineer, and Project Manager. Dr. Ragai worked on several projects with ABB Germany, McDonnell Douglas Aerospace USA, Pratt & Whitney Canada, Canada Network of Centres of Excellence (AUTO21), and The Canadian Institute of Aerospace Research. His areas of expertise include advanced manufacturing processes, finite element simulation, material constitutive modeling, stress analysis, and design of aerospace and automotive components & systems.

Dr. Ragai attended universities in Egypt, Germany, the US and Canada, where he earned a Bachelor’s degree.
Dr. Masakazu Soshi, University of California Davis

Dr. Masakazu Soshi is an assistant professor at University of California Davis (UC Davis) since November 2012. He obtained his Ph.D. degree from UC Davis in 2009 with his dissertation entitled “A study on the development of a multi-purpose spindle for quality productive machining”. In this study, he developed a unique dual motor spindle system for heavy duty CNC machining. In 2008, while still being a student, he was employed as an engineer by DMG Mori Co., Ltd., one of the largest CNC machine tool manufacturers in the world. He worked for the company as a spindle designer for the first half of his career in the company and then transferred to the production technology department to focus on improving productivity of machine tool manufacturing by developing a method of hard milling of cast iron for structural machine tool components. Since his new appointment at UC Davis in 2012, he established the Advanced Research for Manufacturing System (ARMS) Laboratory with emphasizes on machining processes and machine tool design. His research lab currently puts focus on unique applications and processes development using a hybrid CNC machine tool which combines traditional cutting and direct energy deposition (DED). He received the CIRP F.W. Taylor medal award in 2010. He published a total of 10 journals and some conference proceedings and patents after his appointment at UC Davis. Dr. Soshi serves as chairperson of Machine Tool Technologies Research Foundation (MTTRF) since 2013 where he has contributed to organize and lead the annual conferences.

Dr. Hitomi Yamaguchi Greenslet, University of Florida

Hitomi Yamaguchi Greenslet is currently an associate professor in the Department of Mechanical and Aerospace Engineering at the University of Florida. The path that led her to UF includes positions in industry, national laboratories, and academia both inside and outside her native Japan. When she was studying for her master’s degree, she interned for three months at the Paul Scherrer Institut in Switzerland. This experience and a previous supervisor inspired her to explore academia. In 1996, she received her doctorate from Utsunomiya University, Japan, and started her professional career as research associate at the University of Tokyo. She soon realized that industrial experience was necessary to effectively teach Manufacturing Engineering, and she left the university in 1997 and worked as research engineer at Extrude Hone Corporation in Pennsylvania. After gaining some industrial experience, she returned to her alma mater where she was research associate and later associate professor. In 2002-2003, she spent her sabbatical working as a researcher abroad at NASA Glenn Research Center in Ohio, and she left Utsunomiya University in 2007 and moved to UF.

Her research interests have evolved throughout her career and now include ultra-precision finishing (such as magnetic field-assisted finishing), surface functionalization, and medical-device development. Her work has been published in over 80 refereed journal papers, and she has been granted 8 patents. She has received several awards, including Outstanding Young Engineer awards from JSME in 1995, SME in 2000, and JSAT in 2003. She is currently the secretary of the Scientific Technical Committee for Abrasive Processes (STC-G) of CIRP (the International Academy for Production Engineering). She also serves as the secretary of the North American Manufacturing Research Institute of SME. In recognition of her contributions, she has been elected as a fellow of both ASME (American Society of Mechanical Engineers) and SME. In addition to her research, she is passionate about working in the areas of Manufacturing Education and Workforce Development. She is the faculty advisor of the UF chapter of Pi Tau Sigma. She hosts students (from K-12 to university) in her laboratory every summer and has hosted events where professionals can share their experiences of engineering education and career development.