June 19, 2024 (Wednesday), 6:00 – 9:00 pm ET

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

Organized by: ASME/MED and NAMRI/SME

Sponsored by: The U.S. National Science Foundation (providing travel support to students)

Hosted by: University of Tennessee, Knoxville

Location: Knoxville Convention Center, Room TBD

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 information about various research and technical positions in academia, industry, and national laboratories. Panelists will present an overview of their careers and discuss how to be successful professionally in various settings in a roundtable format.

The forum will be held during the co-located manufacturing conferences at University of Tennessee, Knoxville: the ASME 2024 International Manufacturing Science and Engineering Conference (MSEC2024) and the NAMRI/SME 52nd North American Manufacturing Research Conference (NAMRC52).

Agenda

6:00 – 6:15 pm ET:	Opening remarks and welcome
6:15 – 7:00 pm ET:	Up to 3-minute spoken introductions by each panelist.
	Break and switch-over of panelists.
7:15 – 8:00 pm ET:	Up to 3-minute spoken introductions by each panelist.
8:00 – 9:00 pm ET:	Roundtable discussions, Networking and wrap-up
	(Pizza and beverages will be served)

Forum Format

1. Panelists will introduce themselves and discuss their career paths. Panelists have experience in conducting/leading research and engineering projects in academia, government labs, and industry.
2. During each panel session, 20min will be set aside for audience members to a live Q&A poll moderated by Prof. Binil Starly using Polleverywhere.
3. During the roundtable discussions, forum participants can discuss careers in academia, government, and industry. Panelists will discuss how to search for a job, career management, and funding, among other topics that is relevant to the panelist speaker. Participants will be able to visit with several panelists during the 1hr roundtable session.
4. During and after the forum, participants are encouraged to engage in conversations/discussions related to their professional and personal interests.

All registered conference participants are welcome to attend the forum with no additional fee.

Attendance of the Early Career Forum is mandatory for NSF Travel Grant student applicants.

2024 Early Career Forum Chair

Binil Starly, Ph.D.
Professor & Department Head
School of Manufacturing Systems and Networks
Arizona State University
Email: bstarly@asu.edu

The 14 panelists have experience working in academia, government/national labs, and industry. Several of the panelists have experience in more than one of these sectors, as indicated below.

Panelist	Academia	Government/ National Labs	Industry
Nina Arcot (Northrop Grumman)			X
Dr. Mark Du (Argonne National Labs)		X	
Dr. Ardeshir Raihanian (Amazon Lab126)			X
Dr. Richard Seugling (Lawrence Livermore)		X	
Dr. J. Patrick Spicer (General Motors R&D)			X
Dr. Jeffrey Abell (General Motors R&D)			X
Dr. Nehika Mathur (NIST)		X	
Dr. Samantha Webster (NIST)	X	X	
Nestor Vasquez (DuPont)			X
Dr. Agajan Torayev (Robominder.ai)			X
Prof. Mohammed Shafae (University of Arizona)	X		
Prof. Dhruv Bhate (Arizona State University)	X		X
Prof. Jingjing Li (Pennsylvania State University)	X		
Prof. Martin Byung-Guk (Purdue University)	X		X

Panelist Biographies

Nina Arcot, Northrop Grumman
Nina is a Manufacturing Engineer in Northrop Grumman's Future Technical Leaders (FTL) program. In her current role, she leads internal R&D efforts related to additive manufacturing, collaborative automation, and manufacturing simulations. Prior to FTL, Nina was a Mission Assurance lead for NG's innovative ESPASat-L product line of small satellites. Nina completed her bachelor's and master's degrees in the Mechanical & Aerospace Engineering (MAE) department at Princeton, with a focus on materials science coursework and research. She aims to combine her interests in spacecraft engineering, manufacturing, and materials science to develop technologies that increase access to space and improve life on Earth. She is passionate about STEM outreach and volunteers with the Society of Women Engineers (SWE) and the Brooke Owens Fellowship (BOF).

Dr. Mark Du, Argonne National Labs
Dr. Wenchao (Mark) Du is a Materials Engineer at Argonne National Laboratory. He received his doctoral degree in 2021 from Texas A&M University, master's degree in 2015 from Tianjin University, and bachelor's degree in 2012 from Hunan University, all in Industrial Engineering. His expertise is additive manufacturing of advanced ceramic materials, focusing on material development, process optimization, and post-processing. He has more than thirty journal and conference publications and various technical and poster presentations. Recently his research has focused on advanced manufacturing technologies and applications in the area of solar energy.

Dr. Ardeshir Raihanian, Amazon Lab126
Dr Raihanian is a proponent of building sustainability at scale with a focus on transitioning toward Circular Economy. He has been involved in several exciting projects related to residential energy consumption, sustainable design and manufacturing and consumer behavior. His expertise lies within applying machine learning, simulation and optimization techniques to provide business/sustainability insights. Dr Raihanian graduated from Sharif University of Technology, became an instructor for a high School on topics related to Physics. He then moved to the US and completed his M.S. and PhD in Mechanical Engineering from the University of Buffalo.

Dr. Richard Seugling, Lawrence Livermore National Lab (LLNL)
Dr. Richard M. Seugling is the Manufacturing Engineering Section (MES) Leader within the Materials Engineering Division (MED) at Lawrence Livermore National Laboratory (LLNL). He has been at LLNL since 2004 and has been supporting experimental programs at LLNL for over 19 years. He began his career in the Precision Systems and Manufacturing group in the Materials Engineering Division supporting the National Ignition Campaign (NIC) before transitioning to the Defense Technologies Engineering Division focusing on High Energy Density Science (HEDS). Prior to joining LLNL, Dr. Seugling was serving a post doctorate appointment from the National Research Council (NRC) at the National Institute for Standards and Technology (NIST). Dr. Seugling holds a Doctorate in Mechanical Engineering from the University of North Carolina at Charlotte.

Dr. J Patrick Spicer, General Motors
Dr. Spicer is a Chief Technologist, Reconfigurable Assembly Research (General Motors R&D, Manufacturing Systems Research Lab). He led a research team focused on the development of advanced reconfigurable assembly systems for low-volume scalable vehicle manufacturing. He has been at GM R&D for 12 years and has worked for over 20 years in automotive manufacturing. He has made research contributions in the areas of technical cost modeling, battery manufacturing, machine learning, process monitoring, additive manufacturing, scalable manufacturing systems, reconfigurable manufacturing, and machine vision. He is a recipient of the General Motors "Boss" Kettering Award - highest technical honor given to General Motors employees. He is the Inventor / Co-Inventor on over 20 granted patents.

Dr. Jeff Abell, General Motors
Dr Abell is the director & Chief Scientist for Global Manufacturing (appointed 2018) - experienced research & development leader with product development background. Recognized as having strong strategy development and team development & management skills, innovation management track record, and successful turnaround experience. Responsible for GM's global manufacturing research strategies and activities including vehicle electrification, lightweight materials processing, automation, systems and controls. Developed several first-in-industry battery manufacturing technologies, including ultrasonic weld process monitoring and reconfigurable battery assembly systems resulting in tens of millions in benefit. Current research efforts include advanced propulsion, lightweight systems manufacturing, scalable and low-volume reconfigurable systems, and machine learning. Two-time recipient of General Motors "Boss" Kettering Award.

Dr. Nehika Mathur, National Institute of Standards & Technology (NIST)
Dr. Nehika Mathur is a researcher and Project Lead in the Systems Integration Division (SID) at NIST. Here, she leverages her expertise in sustainable manufacturing systems to advance measurement science research that supports the development of technical standards for a Circular Economy (CE). At NIST SID, Nehika leads the CE Closed Loop Recovery research thrust and currently serves as a technical expert with the ISO TC 323 on CE standards. Nehika's research is rooted in Industrial Ecology, Complex systems and Operations research. Her work explores strategies for creating closed-loop systems (including via Life Cycle Symbiosis and Industrial Symbiosis) and developing quantitative decision-making tools to enhance the sustainability of clean energy technologies, critical materials, and plastics.

Dr. Samantha Webster, National Institute of Standards & Technology (NIST
Dr Webster is an NRC Postdoc at NIST Gaithersburg in the Material Measurement Laboratory. She recently graduated with a Ph.D. in Theoretical and Applied Mechanics from Northwestern University. Her research is in metal additive manufacturing technologies with a focus on fundamental interactions and formation of defects in Directed Energy Deposition (DED). With knowledge of defect formation, she has recently begun research in hybrid metal AM techniques to address defects and challenges in metal AM processes as well as alloy development through DED and hybrid-AM techniques. She has received the National Science Foundation Graduate Research Fellowship for her work, and she was recently named one of the Society of Manufacturing Engineers' 30 under 30. With the intent to help people through science, her plan is to continue developing fundamental knowledge in metal additive manufacturing to support fabrication of unique functional designs.

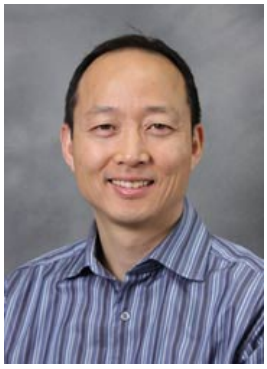
Nestor Vasquez, DuPont
Néstor Vásquez is the Technical Manager for Process Development in Chemical Mechanical Planarization Technologies (CMPT) at DuPont. He leads the development of new processes to produce polishing pads for chip manufacturing. Previously, Nestor worked for Dow Chemical in Core R&D and Automotive R&D. He authored 8 patents on diverse areas, such as ceramic extrusion, carbon fiber composites, solids processing and CMPT. His outstanding contributions earned him the Excellence in Engineering Award for E&I in 2021. Nestor holds a MS in Mechanical Engineering from University of Pittsburgh and a BS from Universidad Santa Maria in Chile. He enjoys traveling and photography.

Dr. Agajan Torayev, Robominder.ai
Agajan Torayev earned his diploma in applied mathematics and informatics from Magtymguly Turkmen State University in 2015 and an MSc in computer science, focusing on deep learning from the University of Bonn in 2019. He worked as a Marie Skłodowska-Curie Researcher at the University of Nottingham from 2020 to 2023, contributing to the Horizon 2020 project. His research involved intelligent decision-making and optimization for Industry 4.0, using techniques like Bayesian optimization and machine learning for the optimization of industrial robots. Currently, he is the CEO of Robominder AI, a UK-based startup creating AI visual inspection systems for manufacturing.

Dr. Mohammed Shafae, University of Arizona
Dr Shafae is an Assistant Professor in the Systems & Industrial Engineering at the University of Arizona. His research interests are in Cyber-Physical Systems Security; Smart Manufacturing Systems; Statistical Process Monitoring; Manufacturing Process Data Analytics (Modeling, Monitoring, and Diagnosis); Advanced Metrology Systems Data Driven Quality Control. He has won the Virginia Tech Teaching Excellence Award, first place in the ASCEND Propel Pitch Competition, multiple graduate fellowship awards, and best track paper awards. Dr. Shafae earned his B Sc. & M Sc. in Production Engineering from Egypt, then went on to complete his M.S and PhD in Industrial & Systems Engineering from Virginia Tech.

Dr. Dhruv Bhate, Arizona State University
Dhruv Bhate is an Associate Professor in the School of Manufacturing Systems and Networks at Arizona State University, where his group (3DX Research) seeks answers to questions in bio-inspired design, architected materials and additive manufacturing. He has co-authored over 50 peer-reviewed publications and 3 book chapters, edited two books, and is co-inventor on 3 patents. Prior to joining ASU, Dhruv spent two years at PADT, Inc, a small business in Tempe, AZ, where he led the company's R&D efforts in metal Additive Manufacturing. Prior to joining PADT, he spent seven years at Intel Corporation developing several laser-based manufacturing processes. Dhruv has a PhD from Purdue University and a master's degree from the University of Colorado at Boulder, both in mechanical engineering.

Dr. Jingjing Li, Pennsylvania State University
Jingjing Li is a Professor of Industrial and Manufacturing Engineering at the Pennsylvania State University, University Park. She holds a PhD and MA from the University of Michigan, Ann Arbor, an MS from Tsinghua University and a BS from Beihang University, Beijing, China. She worked in General Motors R&D Center as an intern for one year and has continued to collaborate with industry for over 15 years. Her primary research interest focuses on materials processing and characterization. She is an Associate Editor of Journal of Manufacturing Science and Engineering, Manufacturing Letters, and Journal of Materials Processing Technology. She received several prestigious awards, such as the ASME Chao and Trigger Young Manufacturing Engineer Award, the US National Science Foundation CAREER award, and recognition as an ASME fellow.



Dr. Martin Jun, Pennsylvania State University

Dr. Martin Jun is a Professor of the School of Mechanical Engineering at Purdue University, West Lafayette, IN, USA. His main research focus is on advanced multi-scale and smart manufacturing processes and technologies for various applications. His sound-based smart machine monitoring technology led to a start-up company on smart sensing. He is an ASME fellow and Area Editor of Journal of Manufacturing Processes. He is also the recipient of the 2011 SME Outstanding Young Manufacturing Engineer Award, 2012 Canadian Society of Mechanical Engineers I.W. Smith Award for Outstanding Achievements, and 2015 Korean Society of Manufacturing Technology Engineers Damwoo Award. He has also been recognized as 25 leaders transforming manufacturing in the Smart Manufacturing magazine. He received his BSc and MASc degrees in Mechanical Engineering from the University of British Columbia, Vancouver, Canada in 1998 and 2000, respectively. He then received his PhD degree in 2005 from the University of Illinois at Urbana-Champaign in the Department of Mechanical Science and Engineering.