NSF Manufacturing Blue Sky Competition and SME David Dornfeld Manufacturing Vision Award

Video: https://youtu.be/AITVZlfnkHY

Abstracts are due April 1, 2020. Instructions on preparing and submitting abstracts will be available at http://www.sme.org/blue-sky-competition/.

The Fourth Annual NSF Manufacturing Blue Sky Competition, funded by the National Science Foundation, will be held during the 2020 SME North American Manufacturing Research Conference (NAMRC) and ASME Manufacturing Science and Engineering Conference (MSEC), June 22-26, 2020 in Cincinnati, OH. The winner of the competition will receive the SME David Dornfeld Manufacturing Vision Award.

The aim of this annual competition is to influence the future of manufacturing research and education in the United States through new, visionary ideas of the future. Such visionary ideas are often described as "radical," "outrageous," "transformational," "unconventional," "convergent," and "breakthrough." Presentations should pose grand challenges to be addressed by pursuing the manufacturing research vision, describing the intersections between disparate disciplines necessary to advance that vision. Topical areas should extend beyond the scope of a single investigator and show potential for transformative impact in areas of interest to federal agencies.

It is likely that team efforts will be needed to formulate such ideas. Therefore, interdisciplinary collaborations are encouraged, including disciplines outside of engineering.

Abstracts will be judged by a selection committee consisting of members from government and industry covering a broad range of manufacturing interests. About six abstracts will be selected to make oral presentations on Wednesday, June 24, 2020, during the NAMRC/MSEC conference in Cincinnati, OH. Transportation, lodging (up to 2 nights), and conference registration expenses of selected speakers will be reimbursed through the University of Wisconsin-Madison.

The participants, and particularly the winner, are expected to work with the organizers to broadly disseminate their Blue Sky idea (e.g., through a workshop, publishing in Manufacturing Letters).

After the conference, SME will post links to presentation slides, so that the ideas can be shared with the manufacturing community. Submitting an abstract for the competition requires that the submitters agree to publish their presentation slides through the SME website. Abstracts and presentations from the last three years of competition have been posted at http://www.sme.org/blue-sky-competition/.

People who are interested in submitting abstracts to the competition are strongly encouraged to talk to Professors Frank Pfefferkorn (frank.pfefferkorn@wisc.edu), ZJ Pei (zjpei@tamu.edu), or Tony Schmitz (tony.schmitz@utk.edu), who will not be serving on the selection committee. It is the intent of the organizers to provide feedback and insight to abstract submitters in an effort to put forward the strongest ideas for advancing manufacturing research in the United States.

2017 Competition Results

SME David Dornfeld Manufacturing Vision Award Winner
Biomimetic Manufacturing
Tony Schmitz, University of North Carolina at Charlotte, Charlotte, NC

Other Finalists
A Manufacturing Process Compiler (MPC) — Vision for a Futuristic Manufacturing Paradigm
Jian Cao, Northwestern University, Evanston, IL

Achieving "Just Press Print" for Metal Additive Manufacturing
Wayne King, Lawrence Livermore National Laboratory, Livermore, CA

Digital Volumetric Processing Using High Performance Computing
Thomas Kurfess, Georgia Institute of Technology, Atlanta, GA

Interactive Virtual Hands-On Manufacturing
Martin Jun, Purdue University, West Lafayette, IN
Next Generation Agile Manufacturing to Enable "Point of Use" Customization for Complex Vehicles
Bill Harris, Sikorsky Aircraft Corp., Stratford, CT

Sharing for Agility
Mike Vogler, Caterpillar Inc., Peoria, IL

The Global Human-Machine Neural Network
Joel Neidig, ITAMCO, Plymouth, IN

The Internet of Skills: Online Virtual Simulators for Skilled Trades
Mark Mills, Northwestern University, Evanston, IL

2018 Competition Results

SME David Dornfeld Manufacturing Vision Award Winner
3D Printing for Civil Infrastructure Construction
Alaa Elwany, *Negar Kalantar*, *Stephanie Paal*, *Zachary Grasley*, *Zofia Rybokowski* – Texas A&M University, College Station, TX

Runners-up
Factories-In-Space
Ajay Malshe – University of Arkansas, Fayetteville, AR; and *Harsha Malshe* – California

Personalized Manufacturing: Psychology and Sociology as Fundamental Design Elements in Future Advanced Production Systems
Laine Mears, *Farbod Akhavan Niaki*, *Eric Muth*, *Richard Pak*, and *Laura Stanley* – Clemson University, Clemson, SC

Other Finalists
Distributed Decentralized Rural Agile Manufacturing
Joel Neidig – ITAMCO, Plymouth, IN

Global Distributed Manufacturing of Personalized Products as a Service
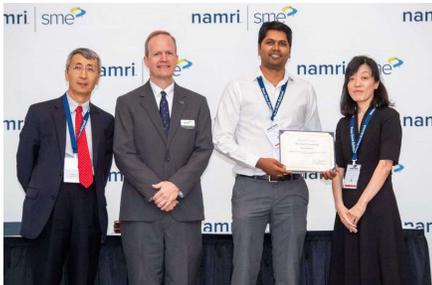*Albert Shih* – University of Michigan, Ann Arbor, MI

Just-in-Time Learning for the Factory Floor
Jeffrey Reed – Virginia Tech, Blacksburg, VA

Metamorphic Manufacturing: The Third Wave in Digital Manufacturing
Glenn S Daehn – The Ohio State University, Columbus, OH; and *Alan Taub* – University of Michigan, Ann Arbor, MI

2019 Competition Results

SME David Dornfeld Manufacturing Vision Award Winner
Computer Games as a Future of Manufacturing Education
Sudhanshu Nahata – ASML US, Wilton, CT

Other Finalists
An Open Data Network for Manufacturing
Jaydeep Karandikar, Andrew Trimmer, and Kati Illouz – GE Research, Niskayuna, NY

Changing the Face(s) of Manufacturing
Shawn P. Moylan – National Institute of Standards and Technology, Gaithersburg, MD

Computer Integrated Manufacturing 4.0: An Ecosystem of Cloud-based CNC Integrated with Cloud-based CAD, CAM and CAPP
Chinedum Okwudire – University of Michigan, Ann Arbor, MI

Geo Technologies Applied to Manufacturing
John K. Schueller, Won-Suk Lee, Pei-Ying Wu, Oscar Castillo – University of Florida, CA

Industry H.0
Harsha Malshe – Santa Clara, CA; and Ajay Malshe – University of Arkansas, Fayetteville, AR

Point-of-Care Engineered Tissue Smart "Factories": Synergistic Engineering to Enable Lab-to-Clinic Translation
Rohan A. Shirwaiker – North Carolina State University, Raleigh, NC