2019 ISM Short-course Announcement

- Introduction to Sustainable Manufacturing (Professors Julius Schoop, Fazeena Badurdeen and I.S. Jawahir)
- Sustainable Product Development (Professor I.S. Jawahir)
- Sustainable Value Stream Mapping (Professor Fazeena Badurdeen)
- Theory and Practice of Advanced Finishing Machining, Grinding and Polishing (Professor Julius Schoop)

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www.ism.uky.edu
Julius Schoop joined the Department of Mechanical Engineering (ME) and Institute for Sustainable Manufacturing as Assistant Professor in August 2018. Dr. Schoop is a materials science and manufacturing process expert (B.S., Chemical Physics, Centre College, 2011; Ph.D., University of Kentucky, 2015) with combination of deep applied and theoretical knowledge of advanced manufacturing processes, particularly machining and finishing processes such as grinding and polishing. Through in-situ, multi-sensor experimental observation using digital image correlation in ultra-high speed (~1 million frames per second) microscopy, the Schoop research group is building industrially-relevant predictive models of the complex behaviors of materials during finish machining and grinding/polishing operations. It is envisioned that through improved and readily deployable closed-loop, sensor-based process models, highly scalable manufacturing processes such as machining, polishing and grinding can not only be used to impart dimensional accuracy and surface quality, but also to induce tailored surface properties, such as compressive residual stress profiles and micro/nano-textured surfaces. Moreover, ongoing research on eliminating the need for inefficient and environmentally harmful coolants/lubricants through techniques such as cryogenic hybrid cooling, an emerging technology developed at ISM, has shown great promise to improve process sustainability.

In addition to process modeling, Dr. Schoop is also currently developing novel manufacturing processes with great application potential in the aerospace, automotive and biomedical industries. These new processes are capable of up to 50 times higher metal removal rates in hard materials than milling and grinding, while also offering improved surface quality and tool-life.

Further, the Schoop research group is developing and refining a method that uses multi-process sensor-pending testbeds for in-situ characterization of machining and finishing processes, located in the Advanced Finishing and Surface Engineering Laboratory at the Institute for Sustainable Manufacturing (RMB R012, see Figure).

A unique feature of the GCSM conference series is its integration of industrial engineering principles and perspectives, sustainable manufacturing technologies in emerging and developing countries, and emphasis on education and workforce development for sustainable manufacturing. A unique session on Day 3 of the conference was a panel discussion with Manufacturing USA Institute directors, the panel was moderated by Prof. Gunther Seliger (Technical University of Berlin, Germany) and Dr. Dean Bartles (President, National Tooling and Machining Association).

Awards and Honors

Keynote Presentations at International Conferences

Fazleena Badurdeen delivered a keynote presentation titled “Manufacturing in the Sharing Economy: Opportunities and Challenges” and also conducted a workshop at the Production and Operations Management Society (POMS) International Conference held in Kandy, Sri Lanka in December 2018.

YuMing Zhang delivered a keynote lecture titled “Machine Learning for Detection of Weld Joint Penetration from Weld Pool Reflection Images” at the 2018 International Conference on Robotic Welding, Intelligence and Automation held in Guangzhous, China in December 2018.

Dusan Sekulic delivered an invited lecture titled “The Role of Writing in Joining” at the 14th International Ceramic Congress held in Perugia, Italy in June 2018.

Recognition of ISM Faculty

Fazleena Badurdeen received College of Engineering Dean’s Award for Excellence in Service 2018.

Fazleena Badurdeen was appointed as Associate Editor for the Resources, Conservation and Recycling journal.

YuMing Zhang was recognized by Society of Manufacturing Engineers as the 2018 Outstanding Associate Editor for Journal of Manufacturing Processes.

YuMing Zhang received the 2018 A. F. Davis Silver Medal from the American Welding Society.

Fazleena Badurdeen was appointed to the Fulbright Specialist Roster for 2018-2021.

Dusan Sekulic received the Robert L. Peaslee Brazing Award from the American Welding Society along with Dr. Hai Fu.

Dusan Sekulic received the Honorable Mention Award from the American Society for Gravitational and Space Research 2018 Art Competition.