

— Call for Papers —
A Symposium on
Tribology of Material Removal/Deformation Processes and Machinery

Sponsored by the ASME Manufacturing Engineering Division's
Manufacturing Equipment & Automation Technical Committee
Manufacturing Processes Technical Committee
2020 ASME International Manufacturing Science and Engineering Conference (MSEC)*
June 22 – 26, 2020
Cincinnati, Ohio

Hosted by the University of Cincinnati, College of Engineering and Applied Science

Technical Focus

Tribology, the science of friction, lubrication and wear between sliding surfaces, plays a critical role in materials processing and performance. For example, in material removal or deformation processes, the severe contact conditions between the tool and workpiece not only determine energy dissipation, process efficiency and tool wear, but also significantly affect the component's surface attributes (e.g., microstructure, residual stress, etc.) which in turn influence material's functional performance under service. Similarly, tribological contacts in machine elements can critically determine the machine's performance, reliability and life cycle. Given that sliding contacts are ubiquitous and particularly severe in manufacturing processes, advances in the field of tribology for better control of friction, wear and energy are of considerable importance. This symposium seeks experimental and theoretical/modeling contributions that advance the state-of-the-art of the science and technology of tribology. While the focus is on tribology of manufacturing processes and machinery, model system studies that contribute to new insights into the nature of sliding surfaces are also welcome. A comprehensive understanding of tribology also warrants an interdisciplinary approach, so submissions are sought from various science and engineering fields including mechanics, materials science, physical chemistry and physics. Specific topics of interest include, but are not limited to:

- Process tribology pertaining to material removal processes (machining, grinding, polishing, etc.), bulk and surface deformation processes (rolling, extrusion, drawing, burnishing, etc.), and sheet metal forming
- Tribology of machine elements (bearings, gears, etc.) and assembled machinery
- Tribology at various length scales from micro/nano to meso to macroscale
- Hard and soft material systems encompassing engineering materials (metals, glasses, ceramics), biological or natural materials (bone, rocks, etc.) and soft matter (polymers, gels, etc.)
- Coatings, surface patterning, texturing, and related methods for reduced wear and friction
- Lubricants, lubrication phenomena and tool wear
- Experiments, theory or modeling of asperity contacts, friction and wear mechanisms
- Tribochemistry, chemomechanical effects, and role of material (microstructure)
- Characterization of interfaces and surfaces/sub-surfaces
- Laboratory testing (tribometers), methods, standards and tribosystem analysis
- *In situ* approaches to tribology

Paper Submission

Authors are encouraged to submit an abstract and full manuscript for review by **November 15, 2019** via the conference website. Final revised manuscripts must be submitted by **March 26, 2020**. The copyright transfer form must be filled out by March 19, 2020 and the presenting author must pre-register by **April 15, 2020** or the paper will be withdrawn from the conference. **No papers are to be submitted to the organizers; submissions will only be accepted via the conference website at <https://event.asme.org/MSEC/>.**

All papers accepted by MSEC2020 can be further submitted to any ASME journals, such as the highly prestigious Journal of Manufacturing Science and Engineering, for consideration of archival publication. In addition, high quality MSEC2020 papers will be automatically channeled to relevant ASME journals for fast-tracked publications.

Additional Symposium Activities

To highlight advancements in this technical area, symposium organizers will:

- work to attract a high-profile international keynote speaker
- organize a paper on the state of the art

Organizers:

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* The conference is collocated with NAMRI/SME's 48th North American Manufacturing Research Conference (NAMRC48) and LEM&P (Leading Edge Manufacturing / Materials and Processing) by The Japan Society of Mechanical Engineers (JSME), which will have a separate call-for-papers. Please note that submissions of the same paper to more than one conferences are not permitted.