

— Call for Papers —

A Symposium on

Advances in the Mechanics of Materials & Manufacturing Processes

Sponsored by the ASME Manufacturing Engineering Division's
Manufacturing Equipment Technical Committee
2019 ASME International Manufacturing Science and Engineering Conference (MSEC)*
June 10-14, 2019
Pennsylvania State University, The Behrend College

Technical Focus

This symposium will bring together material scientists, mechanicians, and industrial and mechanical engineers to discuss recent advances in the mechanics of materials and advanced manufacturing processes. Different approaches to studying mechanics — experimental, theoretical or computational, are all within the scope of this symposium. The symposium also covers a broad array of manufacturing processes (material removal, deformation and additive manufacturing processes) and application areas (manufacturing equipment, machinery, tribology) where a fundamental understanding of process mechanics is critical for improving process efficiency, product quality and material's properties. Special topics of interest, as they relate to advanced manufacturing, include, but are not limited to:

- Innovative experimental methods, including *in situ* techniques, for characterizing material mechanics during processing at multiple length-scales
- Advances in multi-scale modeling (phenomenological, crystal plasticity, etc.) of plastic deformation and ductile failure in material removal, deformation processing, sheet forming and tribology
- Improved understanding and computational modeling of plastic instabilities, localization, damage and fracture mechanics as they pertain to cutting and forming processes
- Advances in understanding of fluid mechanics, flow rheology and fluid instabilities in additive manufacturing processes
- Constitutive models for material behavior under process conditions, and finite element based process modeling approaches
- Properties of materials produced by different processes (forming, additive manufacturing, etc.)
- Micromechanics (e.g., dislocation slip, twinning) and microstructure evolution during processing
- Size-dependent mechanics and chemo-mechanical effects in manufacturing processes
- Applications of novel manufacturing methods for microstructure design and improving structural properties

Paper Submission

Authors are encouraged to submit an abstract and full manuscript for review by **November 02, 2018** via the conference website. Final revised manuscripts must be submitted by **March 07, 2019**. The [copyright transfer form](#) must be filled out and the presenting author must [pre-register](#) by **April 05, 2019** or the paper will be withdrawn from the conference. Authors may also consult www.asme.org/divisions/med/call/ for updates. **No papers are to be submitted to the organizers; submissions will only be accepted via the conference website at www.asmeconferences.org/msec2019/.**

Additional Symposium Activities

To highlight advancements in this technical area, symposium organizers will

- work to attract a high-profile international keynote speaker (including the payment of an honorarium)
- organize a special issue in the ASME Journal of Manufacturing Science and Engineering or ASME Journal of Micro and Nano-Manufacturing
- organize a paper on the state of the art that will be the lead article in the special issue

Organizers:

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*The conference is co-located with NAMRI/SME's 46th North American Manufacturing Research Conference (NAMRC46) which will have a separate call for papers. Please note that submissions of the same paper to more than one conference are not permitted.