

# — Call for Papers —

A Symposium on

## Advances in the Mechanics of Cutting, Forming and Materials Processing

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

This symposium will bring together material scientists, mechanicians, applied physicists, industrial and mechanical engineers to discuss recent advances in the mechanics of cutting, forming and materials processing. The symposium will contain papers showcasing state-of-the-art experimental, analytical and computational mechanics techniques as applied to these manufacturing processes. A broad array of processes and materials fall under the ambit of this call, ranging from basic scientific study to commercial application. Special topics of interest include, but are not limited to:

- Innovative experimental methods, including *in situ* techniques and multi-scale methods, for studying deformation and flow mechanics in cutting, forming and processing
- Advances in multi-scale modeling (phenomenological, crystal plasticity, etc.) of plastic deformation and ductile failure in material removal, deformation processing and sheet forming
- Applications of novel manufacturing methods for bottom-up microstructure design and enhanced structural properties
- Processing-structure-property relationships in processing of novel material systems (e.g., advanced structural alloys, foams, composites)
- State-of-the-art 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 metal and polymer processing
- Constitutive models for material behavior under process conditions, and finite element-based process modeling
- Micromechanics (e.g., dislocation slip, twinning) and microstructure evolution during processing
- Size-dependent mechanics and chemo-mechanical effects in manufacturing

### 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/>.**

### 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
- 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 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.