

— Call for Papers —

A Symposium on Hybrid Manufacturing - Integrated Process Chains Leveraging Additive Manufacturing

Sponsored by the ASME Manufacturing Engineering Division's
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

Although Additive manufacturing (AM) offers an efficient and increasingly viable path for direct creation of high value parts, too often it is depicted as an independent single-step production technique. Normally, AM is not yet capable of the accuracy, precision or reliability of mature subtractive production. As a result, all AM processes are routinely used as part of integrated processing chains with additional manufacturing steps to produce end-use parts and products. Additionally AM is often used in an indirect production step, such as for the creation of tooling or patterns which are used downstream in conventional process chains. Some examples of indirect AM use include, 3D-printed sand molds for casting, AM wax patterns for investment casting and hybrid production of assembly tools. In the broadest sense of hybridizing, incorporating AM into any processing chain brings more digitalization to manufacturing. Hybrid processing is characterized by multi-technology design and manufacturing coordinated using a unified digital thread and co-located into the same cell or even the same setup (in-envelope or all-in-one hybrid machine architectures).

This symposium will focus on the research advances in the areas of hybrid process chains for both direct part production and indirect production and its potential applications in industry. Integrated design and manufacturing via hybrid methods will have significant impact in terms of achieving final engineering requirements (e.g. GD&T, material properties, surface finish, etc.) and will benefit both traditional manufacturers (e.g. machining, grinding, casting, heat treatment) and evolving AM industries (e.g. AM service providers and AM integrators/OEMs). Submissions will highlight the advances in hybrid manufacturing and its role in accelerating the adoption of AM processes. Specific topics of interest include, but are not limited to:

- Technical innovations in design, material models and new applications of hybrid AM components
- Design and manufacturing of AM end use parts and tooling/patterns for traditional processes
- Process planning for hybrid AM
- System integration of AM and traditional processes
- Achieving GD&T through traditional subtractive processes in AM
- Quality and certification of hybrid AM components
- Material and mechanical characterization of hybrid AM components.
- In-envelope hybrid AM for concurrent AM and machining processes
- Advanced surface finishing and non-traditional machining of AM components
- Material property enhancement of AM components through thermal and other treatments

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:

- organize a special issue in the ASME Journal of Manufacturing Science and Engineering
- invite program managers (NSF, DoD/DoE/America Makes) for panel discussions on hybrid AM research directions

Organizers:

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* The conference is collocated with NAMRI/SME's 48th North American Manufacturing Research Conference (NAMRC48) and LEM&P (title name under review) 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.