

# SUBMIT AN ABSTRACT FOR THE FOLLOWING SYMPOSIUM

### ADDITIVE MANUFACTURING

## Nano and Micro Additive Manufacturing

Additive manufacturing has immense potential for design flexibility and new processing methods from precision, high resolution structures to integration of spatially tailored nano/microscale features in large-scale components. This symposium will focus on techniques, feedstock materials, characterization, predictive simulations, application, and upscaling of additive manufacturing with micro- and nanometer-scale resolution. The properties of printed materials and structures, like photonic, catalytic, electrical, magnetic, thermal, and acoustic properties, mechanical behavior, and lifetime/stability of nano and micro additively manufactured materials are also of high interest in this symposium.

The scope includes, but is not limited to, the following areas:

- Advances in existing and upcoming AM processes
- Characterization of processing-microstructure-property relationships
- Upscaling and integration with other processing technologies
- Process monitoring
- Process modelling and simulation
- Microarchitecture-mechanics relationships with an emphasis on nanoscale behavior and size effects
- Multi-material printing, functionally graded, and chemically architected materials
- Functional metamaterials and metamaterial design
- Machine learning and data analysis of the AM processes and materials/structures
- Physio-chemical mechanisms underlying small-scale AM processes
- Application and implementation of micro- and nano-AM
- Investigation of micro- and nano-AM for extreme conditions including high impact, extreme temperatures, radiation, etc.

#### **SPONSORED BY:**

TMS Materials Processing & Manufacturing Division; TMS Additive Manufacturing Committee; TMS Electronic Packaging and Interconnection Materials Committee; TMS Nanomaterials Committee; TMS Nanomechanical Materials Behavior Committee

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