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TMS 2017
146th Annual Meeting & Exhibition

February 26 – March 2, 2017
San Diego, California, USA

ADDITIVE MANUFACTURING: BUILDING THE PATHWAY TOWARDS PROCESS AND MATERIAL QUALIFICATION

This symposium will provide a forum for all veins of additive manufacturing to present their latest results in developing methodology for science-based or practice-based material and process qualification. Sessions will be included on developing processing-microstructure-property- performance relationships in metals and non-metals alike. Experimental, modeling, and combined experimental/modeling approaches are welcome.

This symposium will serve as a venue for the international Additive Manufacturing community—including government, academia, and industry—to define the fundamental interrelationships between feedstock, processing, microstructure, shape, mechanical behavior/materials properties, and function/performance. This will be accomplished through experimental observations, theoretical advances, and computational modeling of physical processes to provide insight and understanding of the nature of the final product and the evolution of microstructure resulting in final part properties and performance. Materials of interest include homogeneous materials (polymers, ceramics, and metals) and heterogeneous materials (foams, polymeric matrix, metallic matrix, ceramic matrix, functionally graded). Areas of interest include:

- **Fabrication**
  - Machines: emerging technologies and advancing current capabilities
  - Processing: feedstock material (including powder, wire, and filament), process and process monitoring (both freeform and direct write), build parameters, repair parameters, post processing (e.g., heat treatment)
  - Specimen design: net-shaped parts; parts machined to shape based on scaling; as built laboratory test specimens/coupons; specimens/coupons machined from larger builds
- **Developing constitutive relationships:** coupling microstructure measurements and experimental stress analysis to characterize mechanical behavior/materials properties targeting performance
- **Closing the feedback loop:** microstructure measurements feedback to fabrication; performance (mechanical behavior, materials properties, and/or functional) feedback to fabrication

ORGANIZERS

John Carpenter, Los Alamos National Laboratory, USA
David Bourell, University of Texas at Austin, USA
Allison Beese, Pennsylvania State University, USA
James Sears, GE Global Research Center, USA
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PROCEEDINGS PLANS

Papers from this symposium will be a part of the *TMS2017 Supplemental Proceedings* volume. Manuscripts for accepted abstracts are due September 1.

SYMPOSIUM SPONSORS

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