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**TMS2019**  
 148<sup>th</sup> Annual Meeting & Exhibition

# CALL FOR ABSTRACTS

March 10–14, 2019  
 San Antonio, Texas, USA

## SUBMIT AN ABSTRACT TO:

### ADDITIVE TECHNOLOGIES

#### Additive Manufacturing of Metals: Fatigue and Fracture III

The current understanding of fatigue and fracture behavior of additive manufacturing (AM) metals is limited and must be expanded before widespread use in fatigue and fracture critical applications can be fully realized. It is the purpose of this symposium to move toward that expanded understanding by providing a forum to present research results from investigations into fatigue and fracture behavior of additive manufacturing of metals. Topics include:

- Processing-structure-properties-performance investigations (more detail below)
- Applicability of existing fatigue and fracture test methods to AM materials
- Development of new fatigue and fracture test methods for AM materials (e.g. small-scale testing)
- Predictive design tools (e.g. critical flaw size measurements)
- Non-Destructive Evaluation (NDE) techniques for AM as they relate to fatigue and fracture
- Integrated Computational Materials Engineering (ICME) as it relates to fatigue and fracture
- Material and/or part qualification as they relate to fatigue and fracture

To further specify the scope of the processing-structure-property-performance investigations, processing includes machine settings (e.g. layer thickness), melt parameters (e.g. energy density), post-processing (e.g. heat treatment, surface treatment), and feedstock variables (e.g. flowability, spreadability, particle size distribution) that can directly impact fatigue and fracture performance of parts. Structure includes crystallographic microstructure (e.g. texture), internal defects (e.g. pores, inclusions), external defects (e.g. surface roughness), residual stress, and chemistry. Properties include all fatigue and fracture properties, such as high-cycle fatigue, low-cycle fatigue, linear elastic fracture toughness ( $K_{Ic}$ ), elastic-plastic fracture toughness ( $J_{-int}$ ), fatigue crack growth rate, and impact toughness (Charpy). Performance includes any end-product testing.

### ORGANIZERS

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Abstract Deadline is July 1, 2018.  
 Submit online at [www.programmaster.org/TMS2019](http://www.programmaster.org/TMS2019)

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