



**SUBMIT AN ABSTRACT BY JULY 1**

**FEBRUARY 27-MARCH 3, 2022**  
**ANAHEIM CONVENTION CENTER & ANAHEIM MARRIOTT**  
**ANAHEIM, CALIFORNIA, USA**  
**#TMSAnnualMeeting**

**SUBMIT AN ABSTRACT FOR THE FOLLOWING TMS2022 SYMPOSIUM:**

## **ADDITIVE TECHNOLOGIES**

### **Additive Manufacturing: Nano/Micro-mechanics and Length-Scale Phenomena**

Additive manufacturing (AM) technologies enable microstructure and hence, mechanical properties to be tailored locally through careful selection of processing parameters and strategies. The characterization of mechanical properties behavior at both the micro- and nano-scales is critical for the fundamental understanding of relationships between processing, structure, and properties. This includes the elastic-plastic response, residual stresses, creep and relaxation properties, fracture toughness, and fatigue in local scales in additively manufactured materials.

This symposium focuses on the properties of various additively manufactured materials (metals, ceramics, polymers, biological/bio-inspired materials, composites) at small length-scales from both theoretical/modeling and experimental viewpoints. The scope includes, but not limited to, the following areas:

- Microstructure-micromechanics relationships of additive manufactured materials
- Location-specific property characterization in additive manufacturing through micro/nano-indentation testing
- In-situ nanomechanical measurements in application environments (thermal, electrical, electrochemical, and biological stimuli)
- Small scale quasi-static tests (tension, compression, bending, and torsional tests)
- Small scale fatigue, creep, and impact tests
- Nano-scale measurements of strain and stress
- Micromechanics-based modeling in additive manufacturing

#### **ORGANIZERS**

**Meysam Haghshenas**, University of Toledo

**Robert Lancaster**, Swansea University

**Andrew J. Birnbaum**, US Naval Research Laboratory

**Jordan S. Weaver**, National Institute of Standards and Technology

**Ariel D. Murphy-Leonard**, Ohio State University

#### **SYMPOSIUM SPONSORS**

TMS Additive Manufacturing Committee

TMS Nanomechanical Materials Behavior Committee

[www.tms.org/TMS2022](http://www.tms.org/TMS2022)

**QUESTIONS?**  
Contact [programming@tms.org](mailto:programming@tms.org)