TMS 2018
147th Annual Meeting & Exhibition

**MARCH 11 – 15, 2018
PHOENIX, ARIZONA**

SUBMIT AN ABSTRACT TO:

MECHANICS AND STRUCTURAL RELIABILITY

DEFORMATION AND DAMAGE MECHANISMS IN HIGH-TEMPERATURE NI, CO AND FE-BASED SUPERALLOYS

Ni-, Co-, and Fe-based superalloys are enabling materials for the design of high-temperature components for aerospace propulsion, chemical processing, oil and gas applications, and power generation. They retain superior strength at elevated temperatures, and show excellent damage tolerance, toughness, long-term stability and resistance to creep accumulation and environmental damage. The performance of these alloys is often improved when formed to optimize microstructure or used in conjunction with surface treatments and coatings or with novel design solutions.

The aim of this symposium is to discuss the mechanisms of deformation and damage in the manufacture and application of high-temperature Ni-, Co-, and Fe-based superalloys. The focus of this symposium will be:
- Roles of deformation and heat treatment on the evolution of microstructure during material processing
- Effects of deformation from manufacture on material and component behavior
- Mechanisms of deformation that determine material behavior
- Development of deformation that gives rise to damage during material application
- Effects of composition and microstructure on resistance to deformation and damage accumulation

Topics of interest may include:
- Elevated temperature forging, recrystallization, grain growth, flow forming, machining and shot peening
- Experimental observation of deformation and damage accumulation
- Constitutive and computational modeling of deformation
- Mechanisms of ambient and elevated temperature plasticity, creep, fatigue, creep-fatigue, crack growth and environmental damage

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