

THE WORLD COMES HERE.  
**TMS 2023**  
152<sup>nd</sup> Annual Meeting & Exhibition

MARCH 19–23, 2023  
SAN DIEGO CONVENTION CENTER &  
HILTON SAN DIEGO BAYFRONT  
SAN DIEGO, CALIFORNIA, USA  
#TMSANNUALMEETING



**SUBMIT AN ABSTRACT BY JULY 1 FOR THE FOLLOWING TMS2023 SYMPOSIUM:**

**MATERIALS DESIGN**

**Fatigue in Materials: Fundamentals, Multiscale Characterizations and Computational Modeling**

This symposium features novel methods and new discoveries for understanding all aspects of material fatigue. It brings together scientists and engineers from all over the world to present their latest work on current issues in: characterizing and simulating fatigue damage; identifying microstructural weak links; enhancing fatigue strength and resistance; reporting on quantitative relationships among processing, microstructure, environment, and fatigue properties; and providing methods to perform life predictions. This symposium further provides a platform for fostering new ideas about fatigue at multiple scales and in multiple environments, numerically, theoretically, and experimentally. The symposium organizers are committed to achieving excellence in 2023 by providing a comprehensive symposium that highlights the relevant fatigue topics to academic and industry research.

This symposium will be organized into six sessions. One of the sessions, related to microstructure-based fatigue studies on additive-manufactured materials, will be jointly organized with the Additive Manufacturing Fatigue & Fracture symposium. The six sessions will be carried out over three full days. Researchers who have achieved new findings in fundamental and industrial fatigue topics will be given the opportunity to provide an invited talk. Additionally, a poster session will be held to supplement the oral presentations and to encourage student involvement. Prizes for best posters will be awarded.

Topics of interest may include (but are not limited to):

- Predictive methods for fatigue properties, such as digital twin approaches; data-driven, data-centric and high-throughput methods; and multiscale modeling approaches
- Advanced experimental characterization of microstructurally driven fatigue behavior, such as emerging characterization methods; multi-modal, correlative and 3D measurements
- Fatigue deformation processes, such as damage initiation, crack propagation, and plastic localization

- Fatigue properties in extreme environments, such as, fatigue properties of novel alloys for extreme environments; fatigue properties at high or cryogenic temperature; very high cycle fatigue
- Fatigue studies and design under the process-(micro) structure-properties-performance paradigm
- Microstructure-based fatigue studies on additive-manufactured materials

**ORGANIZERS**

**Jean-Charles Stinville**, University of Illinois Urbana-Champaign  
**Garrett Pataky**, Clemson University  
**Ashley Spear**, University of Utah  
**Antonios Kontsos**, Drexel University  
**Brian Wisner**, Ohio University  
**Orion Kafka**, National Institute of Standards and Technology

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[www.tms.org/TMS2023](http://www.tms.org/TMS2023)

**QUESTIONS?**  
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