

**SUBMIT AN ABSTRACT BY JULY 1**



**MARCH 14-18, 2021 • ORLANDO WORLD CENTER MARRIOTT  
ORLANDO, FLORIDA, USA**  
[www.tms.org/TMS2021](http://www.tms.org/TMS2021) • #TMSAnnualMeeting

**SUBMIT AN ABSTRACT TO:**

## **CORROSION**

# **COMPUTATIONAL AND MODELING CHALLENGES IN METALS AND ALLOYS FOR EXTREME ENVIRONMENTS**

This symposium is aimed at presenting the challenges faced in computation and modeling for extreme environments, with an emphasis on high temperature, for scales ranging from nano to macro. For instance, how to combine in realistic computational timescales climb and glide that operate at different time scales, namely nanoseconds for glide and several microseconds for climb; how to introduce non-conservative movement of dislocations (i.e. climb) in molecular dynamics, how to take into consideration that the micro-mechanisms are dependent on the microstructural state which evolves quickly for harsh conditions, how to modify theories that are based on isothermal experimental data and are found to be wrong for non-isothermal conditions, etc.

The symposium is also aimed at presenting the challenges associated to the multi-scale approach: which scale is the most important to consider given that loading in extreme environments comes with larger and faster evolutions at all scales. The symposium will bring together research scientists from all over the world to present their latest work on current issues related to high-temperature, very high plastic strain rates, high-pressure, and irradiation damage, to name but a few. This symposium provides a platform for fostering new ideas about what are the current challenges for better predicting the mechanical behavior and damage of materials exposed to extreme environments.

The symposium will be organized into the 4 following sessions that will accept abstracts on the various length scales:

- Creep and high-temperature deformation of crystals
- Mechanisms of deformation at high strain rates
- Radiation effects on plastic deformation
- Time and scale bridging in extreme environments

## **ORGANIZERS**

**Jean-Briac Le Graverend**, Texas A&M University, USA

**Jaafar El-Awady**, Johns Hopkins University, USA

**Giacomo Po**, University of Miami, USA

**Beñat Gurrutxaga-Lerma**, University of Birmingham, USA

## **SYMPOSIUM SPONSORS**

TMS Materials Processing & Manufacturing Division

TMS Structural Materials Division

TMS Computational Materials Science and Engineering Committee

TMS ICME Committee

**Abstract Deadline is July 1, 2020. Submit online at**  
[www.programmaster.org/TMS2021](http://www.programmaster.org/TMS2021).

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