

# 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:**

## NUCLEAR MATERIALS

### Mechanical Behavior of Nuclear Reactor Materials and Components III

Current and future generation nuclear reactors require improved structural materials that improve efficiency during in-service conditions, allow for long reactor lifetimes, and increase safety during accidents. Given the increasingly large number of reactor designs being considered (e.g., fusion, molten salt, LWRs, etc.), a series of distinct material concepts have been proposed to address these needs. Effects of reactor environments on mechanical behavior will be a key component to predicting strength and performance of materials in the aforementioned circumstances. This symposium aims to take a closer look at the mechanical behavior of reactor components across length scales. With recent advancements and increased use of in-situ techniques, more is known about irradiation effects on strength than ever before. Simultaneously, ex-situ techniques are critical to probe component-sized parts and validate the use of a material for inclusion within a reactor. Furthermore, synergy with materials modeling is advancing the prediction of material performance under normal and accident conditions, as well as reactor lifetimes.

Topics of interest include, but are not limited to:

- Mechanical behavior testing, including tension, compression, bend, bulge, creep, fatigue, and fracture
- Effects of environment on strength, including dose, dose rate, temperature, and corrosion
- Development of microstructure sensitive material strength models
- Modeling and simulation of irradiation defect interactions during mechanical testing
- Macroscopic component modeling for full-scale performance
- In-situ mechanical testing, including micromechanical and nanomechanical compression and tension
- Novel techniques to probe material strength under reactor conditions

#### ORGANIZERS

**Assel Aitkaliyeva**, University of Florida  
**Clarissa Yablinsky**, Los Alamos National Laboratory  
**Osman Anderoglu**, University of New Mexico  
**Eda Aydogan**, Middle East Technical University  
**Kayla Yano**, Pacific Northwest National Laboratory  
**Caleb Massey**, Oak Ridge National Laboratory  
**Djamel Kaoumi**, North Carolina State University

#### SYMPOSIUM SPONSORS

TMS Structural Materials Division  
TMS Nuclear Materials Committee  
TMS Mechanical Behavior of Materials Committee

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

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