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:

NUCLEAR MATERIALS

Advanced Characterization and Modeling of Nuclear Fuels: Microstructure, Thermo-physical Properties

Evaluating the evolution of nuclear fuel during reactor operation is essential to foster the scientific understanding of fuel behavior. This can provide the data needed to enhance the burn-up of current fuels, enable the use of new accident tolerant fuel forms and metallic fuels. With this research motivation many research facilities worldwide have developed their ability to characterize fresh and irradiated fuels utilizing advanced electron microscopy and thermal characterization techniques.

The application of these techniques has led to fuels being studied before and after service providing new knowledge and ideas to enhance burnup and fuel utilization or investigate new fuel forms. In addition, these tools have been applied to evaluate the movement of fission products and further the understanding of the fuel clad chemical interactions and are now ready to be deployed in other fields of research as well.

In parallel, model development and implementation of the data generated with advanced techniques in physics-based models for fuel performance codes is becoming increasingly important, both for current fuel burnup extension and advanced fuel development.

This symposium aims to take a closer look at the evolution of the microstructure and thermo-physical properties of nuclear fuels during service, including the interaction region between fuel and cladding. Correspondingly, the synergy with materials modeling in advancing and understanding fuels performance under normal and accident conditions will be considered in the symposium.

Topics of interest include, but are not limited to:

- Scanning electron microscopy characterization of nuclear fuels and its associated techniques such as Energy dispersive spectroscopy, Wavelength-dispersive X-ray spectroscopy, and Electron backscatter diffraction
- Transmission electron microscopy characterization of nuclear fuels
- 3D reconstructions of electron backscatter diffraction or scanning election microscopy images of nuclear fuels
- Thermo-physical property measurements of both fresh and irradiated nuclear fuels
- Modeling of nuclear fuel behavior during operation

ORGANIZERS
David Frazer, Idaho National Laboratory
Fabiola Cappia, Idaho National Laboratory
Tsvetoslav Pavlov, Idaho National Laboratory
Peter Hosemann, University of California

SYMPOSIUM SPONSORS
TMS Advanced Characterization, Testing, and Simulation Committee
TMS Energy Committee
TMS Nanomechanical Materials Behavior Committee
TMS Nuclear Materials Committee

www.tms.org/TMS2022

QUESTIONS?
Contact programming@tms.org