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TMS 2018
147th Annual Meeting & Exhibition

MARCH 11 – 15, 2018
PHOENIX, ARIZONA

SUBMIT AN ABSTRACT TO:

NUCLEAR REACTOR MATERIALS

COMPUTATIONAL MATERIALS SCIENCE AND ENGINEERING FOR NUCLEAR ENERGY

This symposium will highlight current computational materials science and engineering efforts for nuclear reactors in the United States and abroad. High neutron flux, thermal and chemical gradients, and corrosive environments cause significant degradation in the chemical and mechanical properties of materials. Enhanced radiation resistance of structural materials and nuclear fuels are needed to overcome technological challenges necessary for future nuclear systems. Symposium organizers seek abstracts that apply atomistic and mesoscale simulations to discover, understand, and engineer the macroscale performance of fission/fusion reactor materials, including fuel, cladding, and structural materials. This symposium will also consider multiscale modeling efforts that bridge length and time scales in order to better connect simulation results with experimental data for predictive model validation. It will also highlight validation of all relevant models, as well as uncertainty quantification. Finally, the application of ICME approaches to use modeling and simulation to better understand structure-property relationships, their associated links with performance, and their application to designing future reactor concepts and materials is also desired.

Some examples include:

- Modeling and simulation of materials behavior under extreme environments – radiation, corrosion, stress, and temperature, including radiation effects, phase stability, fuel-clad interactions, fission product behavior
- Modeling and simulation of model materials to uncover fundamental behavior that affects material performance in radiative environments
- Developing improved material models for LWR fuel and cladding
- Modeling and simulation of new fuel materials including metal, silicide, and nitride fuels
- Modeling and simulation of new cladding materials, such as silicon carbide, coated zirconium alloys, or FeCrAl
- Development and integration of computational tools, methods, and databases for reactor structural material design
- Uncertainty quantification and validation of all the applications listed above

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ABSTRACT DEADLINE IS JULY 1, 2017. SUBMIT ONLINE AT www.programmaster.org/TMS2018.

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