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TMS 2017
146th Annual Meeting & Exhibition

February 26 – March 2, 2017
San Diego, California, USA

NANOSTRUCTURED MATERIALS FOR NUCLEAR APPLICATIONS II

A paramount challenge in the development of advanced nuclear reactors is to discover advanced materials that can operate reliably in extreme service conditions, i.e. neutron, high temperatures, corrosive environments, etc. Nanostructured materials with a high volume fraction of buried interfaces are theorized to have improved resistance to irradiation. Thus, there is an increasing need to understand how interfacial structures mitigate radiation-induced damage and to design stable nanostructured materials that can survive in these severe irradiation conditions. The aim of this symposium is to provide a forum for the discussion on nanostructured materials stability under extreme conditions. This includes understanding the role of grain boundary and interfacial structures and chemistry on the radiation tolerance and microstructural stability. Presentations on experimental, theoretical, and modeling research are solicited.

Topic areas for this symposium include:

- Manufacturing, characterization, and mechanical testing of nano-engineered materials
- Radiation damage of nano-featured materials, including nanoparticle-dispersion-strengthened composites, nanocrystalline materials, multilayer structured materials, etc.
- The effects of interfaces (free surfaces, grain boundaries, phase boundaries, etc.) on the radiation tolerance of materials
- Nano-mechanical testing of irradiated materials
- Nanostructured waste from materials and fuels (a joint session with the Ceramic Materials for Nuclear Energy Research and Applications symposium)
- Atom probe tomography characterization of irradiated materials (a joint session with the Alloy Phase Chemistry at the Atomic Level: Opportunities and Challenges symposium)

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PROCEEDINGS PLANS

Selected papers from this symposium may be published in the TMS journal, *Metallurgical and Materials Transactions*.

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