



2018 **MRS**[®]
 SPRING MEETING & EXHIBIT
 April 2–6, 2018 | Phoenix, Arizona
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CALL FOR PAPERS

Abstract Submission Opens—September 29, 2017

Abstract Submission Deadline—October 31, 2017

REMINDER: In fairness to all potential authors, late abstracts will not be accepted.

Symposium EN07: Issues, Challenges and Opportunities in Actinide Materials

Actinides exhibit many unique and diverse physical, chemical and magnetic properties, due in large part to the complexity of their 5f electronic structure. This Symposium will concentrate upon the chemistry, physics and material science in the Actinide materials, driven by the 5f electronic structure. Particular emphasis will be placed upon the 5f magnetic structure, surface science, Pu aging and radiation damage, and bulk, thin film and nanoparticle properties and their applications to nuclear security, and energy and medically related issues. Fundamental actinide science and its role in resolving environmental, medical and technical challenges posed by actinide materials will be stressed, particularly with regard to energy applications, including energy generation, novel nuclear fuels and structural materials, waste remediation and waste disposal, but also with regard to medical applications, including the use of new therapeutic and diagnostic isotopes and novel processes for production and pharmaceutical formulations. Both basic and applied experimental approaches, including synchrotron- radiation-based and neutron-based investigations, as well as theoretical modeling computational simulations, are to be part of the Symposium. Of particular importance are the issues connected to non-proliferation, homeland security, nuclear forensics and the potential renaissances in Nuclear Energy and Nuclear Medicine, including fuel synthesis, oxidation, corrosion, intermixing, stability in extreme environments and biological media, prediction of properties via bench-marked simulations, separation science, formulation science, environmental impact and disposal of waste products. This would be the 9th Actinides Symposium at the meetings of the Material Research Society. The previous eight were at Boston, San Francisco and Phoenix.

Topics will include:

- Fundamental actinide science and its role in resolving environmental, medical and technical challenges posed by actinide materials
- Both basic and applied experimental approaches, including synchrotron- radiation-based and neutron-based investigations, as well as theoretical modeling computational simulations
- Pu aging and radiation damage, non-proliferation, homeland security, nuclear forensics and the potential renaissances in Nuclear Energy and Nuclear Medicine
- Energy applications, including energy generation, novel nuclear fuels and structural materials, waste remediation and waste disposal
- Nuclear fuel synthesis, oxidation, corrosion, intermixing, stability in extreme environments and biological media, prediction of properties via bench-marked simulations, separation science, formulation science, environmental impact and disposal of waste products
- Medical applications, including the use of new therapeutic and diagnostic isotopes and novel processes for production and pharmaceutical formulations.
- 5f electronic and magnetic structure, 5f electron correlation, 5f bonding and covalency
- Bulk, surface, thin film and nanoparticle properties and their applications to nuclear security, energy and medically related issues

Invited speakers include:

Rebecca Abergel	Lawrence Berkeley National Laboratory, USA	Boris Maiorov	Los Alamos National Laboratory, USA
Cathy Cutler	Brookhaven National Laboratory, USA	Klaus Mayer	Institute for TransUranics (ITU)-Karlsruhe, Germany
Thomas Gouder	Institute for TransUranics (ITU)-Karlsruhe, Germany	David Shoesmith	Western University, Canada
Ladislav Havela	Charles University, Czech Republic	H. George Shreckenbach	University of Manitoba, Canada
Stepan Kalmykov	The Lomonosov State University, Russian Federation	Dimosthenis Sokaras	Stanford Synchrotron Radiation Lightsource, USA
Gerry Lander	Institute Laue Langevin, France	Shuao Wang	Soochow University, China

Symposium Organizers

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Keywords

5f electronic structure, Chemistry, Physics, Material Science, Energy Generation and Nuclear Fuels, Medical Applications and Pharmaceuticals, Nonproliferation, Nuclear Forensics and Security, Pu Aging and Radiation Damage, Waste Remediation and Disposal