



FP&L Distinguished Nuclear Lecture Series Presents

Dr. David K. Shuh

Senior Scientist, Chemical Sciences Division

Director, Glenn T. Seaborg Center
Lawrence Berkeley National Laboratory

“Soft X-ray Radiation Investigations of Materials Relevant to Actinide Science”

February 3, 2017 | 3:00 PM | MMC Campus | SIPA Room 220

This event is open to the public

Soft X-ray synchrotron radiation methodologies are being developed and employed at the Advanced Light Source (ALS) of Lawrence Berkeley National Laboratory to elucidate the electronic structure of actinide materials. Results from these investigations have begun to provide improved fundamental knowledge that can be used as a scientific basis for the enhanced design of special-purpose actinide materials and the overall understanding of actinide materials. The experimental developments at the ALS have centered on the use of the Molecular Environmental Science (MES) scanning transmission X-ray microscope (STXM) at Beamline 11.0.2 for near-edge X-ray absorption spectroscopy (XAS), and on X-ray emission spectroscopy (XES) at several beamlines, focusing primarily on light atom constituents (C, N, O, F) for ligand K-edge XAS, and on metal-ion centers plus light-atom signals for XES. The spectromicroscopy capabilities of the STXM provide the means to investigate and determine the speciation in a range of actinide materials, particularly those of technological and environmental interest with spatial resolution that reaches to the true nanoscale.

Dr. David Shuh is a senior scientist in the Heavy Element Chemistry Group of the Chemical Sciences Division and the Director of the Glenn T. Seaborg Center at LBNL. Dr. Shuh's research focuses comprehensively on the science of the f-elements, in particular the actinide elements with an emphasis on the transuranic elements (e.g., neptunium, plutonium, americium, curium). He is a world-renowned expert in the development of large-scale synchrotron radiation instrumentation and techniques to explore the fundamental chemistry and physics of f-electron materials. His current interests focus on determining the electronic structure and coordination chemistry of f-electron and novel materials to understand their physical and chemical behavior.