



Contribution ID: 40

Type: Oral

## Recent soft X-ray science with actinides and new opportunities for actinide science with synchrotron radiation

*Tuesday 20 May 2014 08:40 (25 minutes)*

Synchrotron radiation (SR) methods have been employed to investigate the chemistry and physics of a wide range of topics in actinide science for several decades. Over this period, the number of SR techniques brought to bear on critical issues in the actinide science field has grown greatly. Several of the results from actinide SR studies have yielded truly unique information that has fundamentally improved the understanding of actinide chemistry and physics. Recently, there have been increasingly significant activities in the soft X-ray region of the SR spectrum to probe the electronic structure of actinide materials. A key aspect leading to the recent impact and success of the soft X-ray approaches is the invaluable contribution of theory and simulation not only to understand, but also to predict results from studies based on the absorption and emission methodologies. This presentation will briefly recount contemporary progress in the soft X-ray region using absorption and emission techniques. Recent investigations of electronic structure and chemical bonding in a range of actinide materials that includes fundamental materials as well as complexes relevant to separations and catalysis will be highlighted. The soft X-ray studies will be used to set the stage for the prospects of new, near-term scientific opportunities for actinide science with SR. The advent of new developments in beamline instrumentation, light sources, and detector technologies presents unique opportunities for actinide science with SR that will be highlighted.

**Primary author:** Dr SHUH, David (LBNL)

**Co-authors:** Dr PRENDERGAST, David (Lawrence Berkeley National Laboratory); Dr GUO, Jinghua (Lawrence Berkeley National Laboratory); Dr BUTORIN, Sergei (Department of Physics and Astronomy, Uppsala University); Dr MINASIAN, Stefan (Lawrence Berkeley National Laboratory); Dr KOZIMOR, Stosh (Los Alamos National Laboratory); Dr TYLISZCZAK, Tolek (Lawrence Berkeley National Laboratory); Dr YAITA, Tsuyoshi (Japan Atomic Energy Agency)

**Presenter:** Dr SHUH, David (LBNL)

**Session Classification:** Solution and Coordination Chemistry of the Actinides

**Track Classification:** Solution and Coordination Chemistry of the Actinides