

# Fall 2016 Joint Colloquium

## Materials Department & Materials Research Laboratory

**Professor Brent Melot**  
Dept. of Chemistry  
University of Southern California

Friday, October 21st, 2016  
11:00 am, ESB 1001



### **Design Principles for the Next Generation of Intercalation Electrodes**

The most important problem the world faces is how to establish a sustainable energy infrastructure. A critical part of this grand challenge is how to store massive amounts of energy economically and safely. While a large body of work has been dedicated to identifying and enhancing the performance of new intercalation hosts to help Li-ion batteries meet this need, a fundamental understanding of the mechanism for ionic transport through these materials is still lacking. In this talk, a general strategy for the design of new insertion electrodes will be presented with a particular focus on our group's efforts to develop new electrode materials using Earth-abundant and non-toxic elements like Fe and SiO<sub>2</sub>.

### **Bio**

Brent C. Melot received his Ph.D. from the Materials Department at the University of California, Santa Barbara under the supervision of Ram Seshadri where his research focused on understanding the relationship between atomic structure and magnetic interactions in complex oxides. After completing his doctoral work (2010), he joined the Laboratoire de Réactivité et Chimie des Solides in Amiens, France as a postdoctoral research associate under Jean-Marie Tarascon. Starting in July 2012, he became an Assistant Professor in the Department of Chemistry at the University of Southern California in Los Angeles where his group focuses on developing insights into how the crystal structure and composition of materials influences the performance of intercalation electrodes, solid electrolytes, photovoltaics, and magnetoelectric multiferroics.

<http://www-bcf.usc.edu/~melot/>

Hosted by Ram Seshadri.