



Inorganic Chemistry Seminar Series

Tuesday, February 27, 2018, 12:30 pm

Seaver Science Library 150

SSC Auditorium next to the library

Professor Michelle Dolgos

Department of Chemistry

Oregon State University

Structure-Property Relationships in Novel Piezoelectric and Ferroelectric Materials

Abstract:

Due to the environmental impact of lead, there is a considerable focus on the synthesis of lead-free piezoelectric materials. $\text{Pb}(\text{Zr,Ti})\text{O}_3$ (PZT) is the current industry standard for piezoelectric ceramics, but has a major disadvantage in that it contains lead. Our understanding of the high piezoelectric response in PZT is a direct result of the incredibly detailed structural studies that have been performed. Unfortunately, the same level of detail has not been applied to the lead-free counterparts of PZT. While some structural studies have examined both the average structure and local distortions of important lead-free piezoelectrics, there is currently not enough information to form a hypothesis about why PZT outperforms the lead-free alternatives. Several examples linking the structure of a material to its properties will be discussed to highlight the importance of obtaining a comprehensive structural description of lead-free piezoelectric materials in order to make new materials via rational design. This talk will be broad in scope, discussing the background behind piezoelectrics and our group's attempts to synthesize and characterize new high performing, lead-free piezoelectric and ferroelectric materials

Hosted by Professor Brent Melot

The scientific community is invited

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