



# Inorganic Chemistry Seminar Series

Wednesday, December 6, 2017, 12:00 pm  
GFS 116

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### **Boron Rich Nanoclusters for Energy Storage Applications and Advanced Catalyst Design**

#### **Abstract:**

Boron Rich Nanoclusters (BRNs), also known as boron and carborane cluster anions, are 3-dimensional analogues of Hückel aromatics that possess extraordinary thermal, chemical and electrochemical stability. Over the last half decade we have established a program aimed at utilizing the properties of BRNs to design novel ion conducting materials as well as sophisticated ligand architectures for catalysis. In this seminar, a concise summary of ongoing projects related to advanced energy storage device development will be disclosed, including solution-based Mg batteries and solid-state ion conductors for various elements of interest. In addition, the development of BRN containing phosphine and N-Heterocyclic Carbene ligands will be described, as well as their applications in classical catalysis. Additionally, a new approach to stoichiometric and catalytic chemistry, namely “Cooperative Ion Pairing,” will be introduced. The term Cooperative Ion Pairing refers to complex ion pairs that can operate together to achieve novel reactions or tandem sequences that would otherwise be challenging or impossible with single component systems.

*The scientific community is invited*