



A great deal of interest in current research is focused on materials at the interface between macroscopic and microscopic realms. Research activity in molecular magnetic and conducting materials falls under the natural umbrella of this current trend. A traditional method for obtaining magnetic materials at the nanoscale level is by the mechanical preparation of small magnetic particles by the "Top-Down" approach but this method is limited by the inherent non-uniform size distribution of nanoparticles. The fascination with magnetism in confinement has led to a growing emphasis on the preparation of materials via solution methods that take advantage of the intrinsic chemical and geometrical properties of a molecule for the design of magnetic compounds. In this vein we are targeting magnetic architectures that involve transition metal ions bridged by the cyanide anion which is an excellent ligand for magnetic exchange. Another area of activity that intersects with our activity in magnetism research is that of conductors based on metal ions coordinated to organocyanide acceptor molecules such as TCNQ. This research is inspired by seminal studies that began at Dupont in the 1960's on compounds that continue to be of high interest for applications such as non-volatile memory devices. We are determining the structures and measuring the single crystal properties of metal organic framework solids based on transition metal ions and organocyanide acceptor ligands. New insights into the factors that affect simple binary  $M(\text{TCNQ})$  phases as well as more complex coordination compounds based on TCNQ molecules or reduced derivatives have been gained by these efforts. The chemistry described in this talk is based on simple coordination chemistry principles, ideas that were introduced by Alfred Werner over a hundred years ago.

Cyanide And Organocyanide Based Molecular Materials: A Golden Opportunity for Coordination Chemistry in the 21st Century

## Prof. Kim Dunbar Texas A&M University

Friday – April 23, 2010

3:00 pm: Lecture

2:30 pm: Pre-Lecture Reception

Host: BUWIC

Life Science and Engineering Building Auditorium

24 Cummington Street, B01

[www.bu.edu/chemistry](http://www.bu.edu/chemistry)