

Condensed Matter/Bio Physics Seminar

Department of Physics

Thursday, October 6, 2016

“Metal-Organic Magnets Incorporating Redox-Active Semiquinoid Ligands: From Molecules to Materials”

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Abstract: Molecule-based metal-organic magnets offer several key advantages over their inorganic counterparts, such as chemical control and tunability of structure and function, solution-based synthesis and processability, and low density. These compounds may find use in applications including spin-based information storage and processing, the development of lightweight permanent magnets, and the magnetic separation of gases. All of these applications would benefit from a higher operational temperature, which is directly correlated to the strength of magnetic interactions within the compound. This presentation will describe our efforts to synthesize metal semiquinoid molecules and extended solids that feature strong magnetic exchange coupling between metal and ligand radicals. More specifically, it will present the synthesis and properties of new radical-bridged compounds comprising dinuclear molecular complexes, one-dimensional chain compounds, and two-dimensional layered materials. In addition to magnetic properties, electronic conductivity and optical properties of these compounds will be presented.

The seminar will be held at 2:00 pm in 2214 SES.