DEPARTMENT OF CHEMISTRY
Departmental Seminar
MacN 222
Tuesday, October 17, 2017 at 2:30 p.m.

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Title: “Striving For Synthetic Control In Cluster Chemistry: The Quest For Hybrid Molecule-Based Materials”

The bottom-up approach to materials synthesis, has allowed for the introduction of exciting new properties and often novel functionalities, not possible with top-down methods. For example, in metal-organic frameworks (MOFs) the linker size and/or its properties control the porosity and other useful properties. The latter, often leads to hybrid materials capable of performing multiple functions. In addition, the material’s properties largely depend on the characteristics of the molecular building blocks. As such, if one can control the chemistry of both the building blocks and the linkers he/she may be able to control the materials’ properties at will. In turn, this means that properties could potentially be altered either a priori or a posteriori with chemistry or different stimuli, respectively. Molecular magnets are an interesting class of molecule-based materials, which behave as magnets below a blocking temperature TB. In single-molecule magnets (SMMs) the magnetic properties are intrinsic to the molecule. The model family for SMMs is the Mn12 lineage of clusters. Our work is focused on a) finding routes to link Mn12 SMMs into one-, two-, and three-dimensional coordination polymers and MOFs, and b) blocking the polymerization by design in order to obtain oligomers of different sizes at will. In this talk, our synthetic efforts will be discussed, as well as our investigation on the use of external stimuli to induce property changes on the resulting materials.

Coffee & Timbits will be served at 2:20

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