TRENT UNIVERSITY
CHEMISTRY/PHYSICS SEMINAR PROGRAM

Dr. Thomas A. Singleton

Barrett Research Group
Department of Chemistry
McGill University
Montreal, Quebec H3A 0B8

Wednesday, January 14, 2015
11:00 am
Science Complex Room 115

"The azobenzene chromophore: Fundamentals and applications"

Azobenzene and its many derivatives have found interesting applications in diverse areas of materials science, such as light harvesting for energy conversion, pH-sensitive indicators, and as molecular "muscles" in nanoscale machines, owing to its strong colouration and characteristic *trans-cis* photoisomerization. In this talk, I will describe our investigation of the thermal and photo-induced isomerization of two azo compounds at high external pressure: the parent azobenzene chromophore, a crystalline solid, and poly(Disperse Red 1 acrylate), a well-studied azo-functionalized polymer. Irradiation of several azobenzene derivatives at ambient pressure showed that even in the rigid matrix of a crystalline solid, isomerization could induce large-scale deformation of macroscale crystals.

In addition to the high-pressure experiments, I will describe the development of azobenzene derivatives capable of acting as colourimetric indicators for the neurotransmitter dopamine. The candidate molecules were assessed based on the degree of change in their visible absorption spectrum upon exposure to dopamine, as well as the concentration of analyte required to induce the change. The most successful indicators were then incorporated into biocompatible polyelectrolyte coatings, with the ultimate goal of developing a biocompatible optical probe for measuring brain activity *in vivo*.

ALL WELCOME