

**Cassandra Fraser**  
University of Virginia  
Department of Chemistry

**"Light Emitting Boron Biomaterials for Imaging and Oxygen Sensing "**

February 9<sup>th</sup>, 2009  
Time: 4:00 - 5:00 PM  
Refreshments: 3:30 - 4:00 PM  
Room: Wilsdorf 101

**Abstract**

Polymeric boron biomaterials are noted for their luminescence. Recently we reported that difluoroboron dibenzoylmethane-poly lactide materials are multi-emissive. In the solid state they exhibit delayed emission, namely unusual room temperature phosphorescence and temperature sensitive delayed fluorescence in addition to the expected intense fluorescence. Emission color tuning may be effected by ligand modifications and a simple but powerful method involving the polymer molecular weight. Polymer composition also affects photophysical properties. In comparison to the common 2-photon dye, bodipy, these materials do not require a heavy atom for room temperature phosphorescence; however, introduction of heavy atoms into boron diketonate materials facilitates intersystem crossing and increases phosphorescence intensity. Methods for modulating relative singlet and triplet intensities for "turn on" and ratiometric oxygen sensing will be presented. These materials have been fabricated as nanoparticles for use in biological imaging and oxygen sensing in cells, tissues and in vivo vascular and tumor model systems.