Chemical & Physical Sciences
UNIVERSITY OF TORONTO
MISSISSAUGA

COLLOQUIUM
TUESDAY, 7 OCTOBER 2014
12:00 NOON – 1:00 PM
IB280

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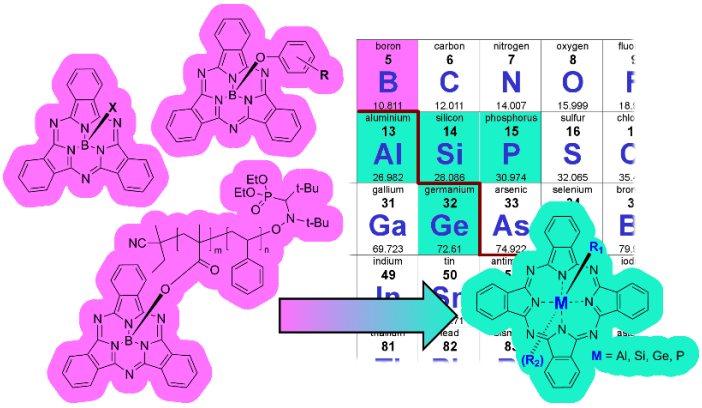
Boron subphthalocyanines and the exploration of other p-block metal phthalocyanines for use in organic electronics



For some time our group has been focused on the design and synthesis of derivatives of boron subphthalocyanine (BsubPc) for application in organic electronics. In most cases, organic electronic devices utilize the prototypical BsubPc, chloro boron subphthalocyanine (Cl-BsubPc). We have shown that by using facile chemical transformations we can tailor the nature of the BsubPc to a dye, sublimate, engineered crystal or polymer. Early on in our research program we showed that peripheral functionalization of the BsubPc moiety had detrimental effects on the electrochemical behavior/stability. We therefore focused on chemical derivatization of the boron metal centre while maintaining the hydrogen periphery. The chemical transformations we have found most successful rely on the oxo-philicity of the boron metal centre. In this presentation I will outline examples of each type of BsubPc, the chemistry we used to achieve each derivative, in addition to presenting their application in organic electronic devices including organic light emitting diodes (OLEDs) and organic photovoltaics (OPVs). I will also highlight our group's recent interest in expanding our methodology to other p-block metal phthalocyanines (M-Pcs) including Pcs of aluminum, silicon, germanium and phosphorous. In each case the metal was chosen due to its natural abundance and its ability to participate in our previously established oxo-philic based chemistry. Preliminary organic electronic device data will also be presented.