PHOSPHORUS(I), PHOSPHORUS(III) AND PHOSPHORUS(V) CHEMISTRY OF AN NCN PINCER LIGAND

T. Ogawa[a], C. L. B. Macdonald[a], Tanner George[a], Michael A. Land[b], and Katherine N. Robertson[c]

[a]Department of Chemistry, Dalhousie University, Halifax, Canada
[b]Department of Chemistry, Mount Saint Vincent University, Halifax, Canada
[c]Department of Chemistry, Saint Mary' University, Halifax, Canada

Modern main group chemistry is significantly influenced by ligand libraries originally generated for transition metals. Suitable ligands can stabilize a range of oxidation states and enforce geometries about the main group element which impacts the nature of its frontier orbitals and can permit different reactivity. Main group complexes with unusual geometrical constraints have demonstrated remarkable transformations and catalytic abilities.

Our group is probing main group complexes bearing 2,6-bis(benzimidazole)phenyl (BBIP) to enforce a meridional coordination environment and which provides a robust carbon-element bond. These ligands offer a tridentate coordination environment and an easily tunable backbone but with very minimal steric protection of the main group element. We have found that these ligands can support phosphorus in the +1, +3, and +5 oxidation states and each of these exhibits interesting reactivity. Our latest results with these and related compounds will be presented.