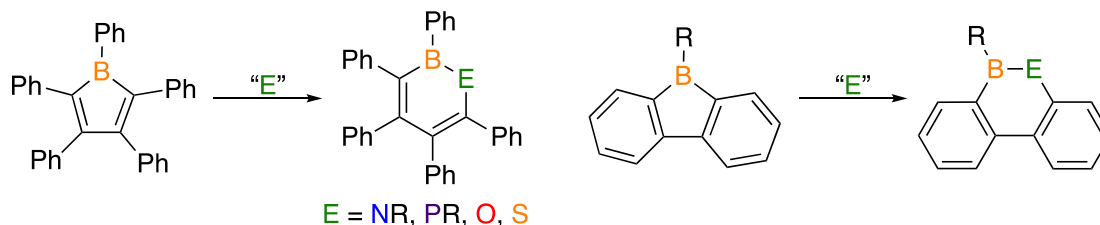


Converting Anti-Aromatic to Aromatic: A Method to Access Boron-Containing Heteroarenes

Caleb D. Martin
Baylor University

The concept of inorganic doping by substituting boron and a lone-pair bearing heteroatom in place of a C=C unit in carbon-based aromatics is an attractive method to alter the electronic properties. Our group has been working on developing a facile route to access inorganic/organic hybrid aromatic species via ring insertion reactions with anti-aromatic BC₄ heterocycles, namely boroles.¹ The insertion chemistry has been effective for the preparation of 1,2-azaborine,² 1,2-phosphaborine,³ 1,2-oxaborine,⁴ and 1,2-thiaborine⁵ heteroarenes which all have lower band gaps, red-shifted absorbances, and larger dipole moments in comparison to their carbonaceous counterpart, benzene. Ongoing efforts are focused on enhancing the electronic properties of these boracycles to explore their utility in electronic materials. Our current strategy is to extend conjugation in the inorganic/organic hybrid arenes by utilizing borole-based starting materials with conjugation installed.⁶ The mechanisms of these reactions and properties of the boracycles will be discussed.



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