Ketal-Azaborine versus Ketal-Azaborine with a Spacer: Structural Effects on the Photophysical Properties of Tunable Heteroaromatic Polycyclic Chromophores

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Flat-structured heteroaromatic polycyclic compounds with extended conjugated π-systems such as azaborines are in high demand in the material and imaging technology markets because of their unique features such as simultaneous tunability of fluorescence color and intensity. We have designed, synthesized, and investigated a series of novel conjugated thermally stable ketal-azaborine chromophores that contain a phenyl ring as a spacer between electronic moieties and the ketal-azaborine core as easily tunable high-luminescent organic materials. We investigated the impact of the phenyl spacer on the ketal-azaborine unit. We examined the structural effects on their photophysical properties by incorporating electron –donating and –withdrawing substituents on the spacer. We will also investigate the effects of the different electronic moieties on the HOMO and LUMO energies to help understand their fluorescence tunability and the effect of intramolecular charge transfer on the light emitting properties.