Photophysical properties of Donor-Acceptor (D-A) fluorescent sensors

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Organic donor-acceptor (D-A) molecules possess a common motif with both an electron-donating and electron-withdrawing group separated by a conjugated π system. Such D-A type molecules are widely employed in the fields of chemical and biological sciences, providing unique metal-free control over their reactivity and behavior with low-energy, visible light.[1]

Fluorescent dyes based on the BODIPY core have been the focus of intensive research because of their interesting photophysical properties.[2-5] Depending on the specific chemical environment and how it is used, it can exhibit characteristics of both donors and acceptors. Important photophysical characteristics of BODIPY include high fluorescence quantum yields, narrow absorption and emission bands, good solubility in a variety of solvents, high photochemical stability and relatively good biological uptake.[2-5]

In this presentation, a series of D-A molecules as well as fluorescent sensors based on BODIPY are studied via DFT methodology. Their photophysical properties are analyzed and their potential as molecular logic gates is investigated. Theoretically, the effect of the used methodology on accurate results is investigated.

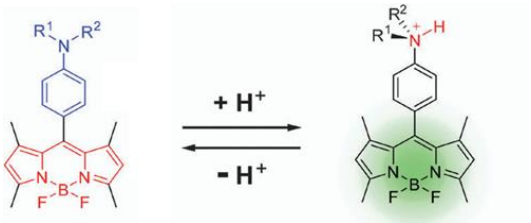

Figure 1. Bodipy Derivative.

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