



FLUOROPHORES: WITH OR WITHOUT BORON?

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Research in the field of luminescent molecules with an accessible synthesis allowing emission wavelengths to be tuned by chemical structure remains a great challenge. These molecules have strong potential for use in various optoelectronic fields such as OLEDs or OPV devices and, with appropriate chemical substitution, could serve as powerful tools in biology for fluorescence microscopy imaging or molecular recognition applications (staining, biological labeling of proteins, antibodies or DNA). Over the past twenty years, we have introduced several synthesis methodologies for fluorescent borate complexes such as BODIPY, enabling us to tune color, substituents on the boron, solubility in various media, including water, and so on.

Particular attention has been paid to BODIPYs with high brightness in the Red-NIR region, motivated by fundamental studies of these dyes but also by their potential. Recent advances in the synthesis of various extended and fused π -BODIPYs, and their potential as absorbers in an OPV device or as red-NIR labels for biological applications will be presented. Other luminescent boron-based complexes stabilized on a cyanine backbone have been studied in N⁺B⁻O or N⁺B⁻N chelation mode, with i.e. 2-(2'-hydroxyphenylbenzoxazole), salicylaldimine ... The study of these dyes, which offer properties competitive or complementary to those of BODIPY, with easy synthesis and modification procedures, led us to investigate their emissive ligands. Indeed, the photophysical properties of these particular molecular structures based on excited-state intramolecular proton transfer (ESIPT) attracted our interest due to their large Stokes shift and high solid-state emission.