

COVALENT DIMERS OF CURCUMINOID-BF₂ DYES: SYNTHESIS, OPTICAL AND PHOTOCHEMICAL PROPERTIES

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The development of organic dyes containing electron donor (D) and acceptor (A) groups connected *via* a π -conjugated bridge is a very active domain. Indeed, D- π -A or quadrupole-like D- π -A- π -D systems show electronic structures characterized by an intermolecular charge transfer in the ground and excited states which makes possible to obtain remarkable absorption and fluorescence emission properties. For instance, these systems have applications in (opto) electronics, organic photovoltaics and non linear optics.

Since 2012, our team developing the synthesis of D- π -A- π -D chromophores based on the curcuminoid skeleton in which A is a boron chelate.[1] A large series of aromatic donor cycles could be considered, allowing efficient modulation of optical and electrical properties in solution.[2,3]. These molecules have also been studied in the solid state (nanoparticles, single crystals, thin films) and high values of near-infrared fluorescence quantum yields were obtained.[4,5].

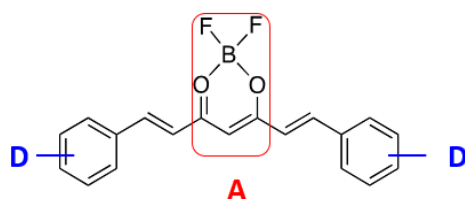


Figure 1. Chemical structure of the curcuminoid-BF₂ dyes featuring lateral electron donor (D) groups and the electron acceptor (A) dioxaborinine unit.

In order to get valuable insights into the correlations between optical properties and supramolecular interchromophoric interactions, we are designing covalent dimers in which two curcuminoid-BF₂ units are connected by a flexible link. Depending on the nature of the solvent, folded structures can form allowing intramolecular π -stacking in model dimeric aggregates. We will present the synthesis and optical properties of a first series of covalent dimers.

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