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Synthesis and Photophysical Studies of BOPIDY Dyes Conjugated with 4-Benzyloxystyryl Substituents

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Abstract : Synthesis and photochemical studies of BODIPY dyes have been investigated in this work in order to have a broad benchmark of this functionalized photosensitizer for biological applications such as photodynamic therapy or antimicrobial activity. The common acid catalyzed synthetic method was used, and BODIPY dyes were obtained in quite a good yield (25 %) followed by bromination and Knoevenagel condensation to afford the BODIPY dyes conjugated with maximum absorbance in the near-infrared region of the electromagnetic spectrum. The fluorescence lifetimes, fluorescence quantum yield, and Singlet oxygen quantum yield of the conjugated BODIPY dyes were determined in different solvents by using Time Correlation Single Photon Counting (TCSPC), fluorimeter, and Laser Flash Photolysis respectively. It was clearly shown that the singlet oxygen quantum yield was higher in THF followed by DMSO compared to another solvent. The same trend was observed for the fluorescence lifetimes.

Keywords : BODIPY, photodynamic therapy, photosensitizer, singlet oxygen
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