

Abstract

NIR absorbing and emitting bodipy dyes have been synthesized that are functionalized with styryl moieties containing solubility inducing hexyl and ethylhexyl chains and monofunctionalization at the C-5-position. NIR styryl BODIPY dyes containing iodo-substituent at C-5 position 3a-5a and 3b-5b were synthesized by Knoevenagel Condensation reaction, Corresponding TMS functionalized compounds 4a-6a and 4b-6b were synthesized by Sonogashira reaction and all the synthesized compounds were characterized by ^1H NMR,

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^{13}C NMR, mass spectrometry, UV-vis absorption and fluorescence studies. These BODIPY dyes form suitable Förster Resonance Energy Transfer (FRET) pairs with squaraine dyes. Energy transfer efficiencies (ETE) for the four FRET pairs (styrylBODIPY and suitable squaraine dyes SQ2, SQ4, NIRSQ) were examined by integrated area under the emission intensity curve analysis of the pure donor emission as well as the emission of donor in the presence of acceptors (i.e., in co-solutions). Among these four FRET pairs, 4a+SQ2 showed highest ETE of ~ 68 %, other FRET pairs showed ETE of ~ 52-55 %. Such styryl BODIPY compounds have potential applications in bio-labelling and bio- imaging studies which will be explored by us in the future.