

## 1,8-Naphthalimide Substituted 4,4-Difluoroboradiaza-S-Indacene Dyads: Synthesis, Structure, Properties and Live-Cell Imaging

**Authors :** Madhurima Poddar, Vinay Sharma, Shaikh M. Mobin, Rajneesh Misra

**Abstract :** Three 1,8-naphthalimide (NPI) substituted 4,4-difluoroboradiaza-s-indacene (BODIPY) dyads were synthesized via Pd-catalyzed Sonogashira cross-coupling reaction of ethynyl substituted NPI with the meso-,  $\beta$ - and  $\alpha$ -halogenated BODIPYs, respectively. The photophysical and electrochemical data reveals considerable electronic communication between the BODIPY and NPI moieties. The electronic absorption spectrum reveals that the substitution of NPI at  $\alpha$  position of BODIPY exhibit better electronic communication between the NPI and the BODIPY units. The electronic structures of all the dyads exhibit planar geometries which are in a good correlation with the structures obtained from single crystal X-ray diffraction. The crystal structures of the dyads exhibit interesting supramolecular interactions. The dyads show good cytocompatibility with the potential of multicolor live-cell imaging; making them excellent candidates for biological applications. The work provides an important strategy of screening the substitution pattern at different position of BODIPYs which will be useful for the design of BODIPY based organic molecules for various optoelectronic applications as well as bio-imaging.

**Keywords :** bio-imaging studies, cross-coupling, cyclic voltammetry, density functional calculations, fluorescence spectra, single crystal XRD, UV/Vis spectroscopy

**Conference Title :** ICOC 2019 : International Conference on Organic Chemistry

**Conference Location :** Copenhagen, Denmark

**Conference Dates :** June 11-12, 2019