

## BF<sub>2</sub> Chelated Azadipyrromethene- A Near-IR Emitting Electron Acceptor for Building Photosynthetic Model Compounds

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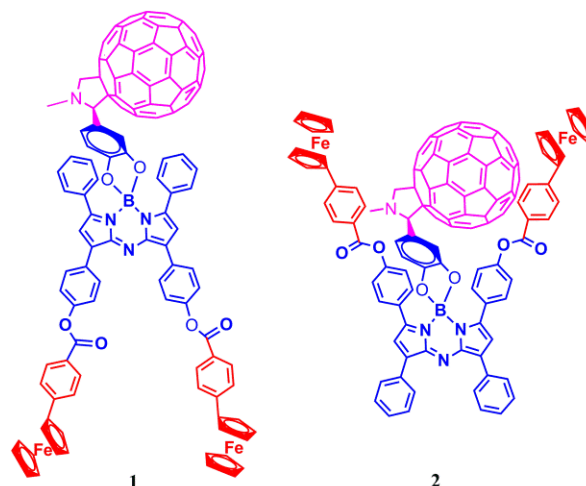
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Donor-acceptor distance, orientation, and photoexcitation wavelength are key factors in governing the efficiency and mechanism of electron-transfer reactions both in natural and synthetic systems. Although distance and orientation effects have been successfully demonstrated in simple donor-acceptor dyads, revealing excitation wavelength dependent photochemical properties demands multi-modular photosynthetic reaction center model compounds. Here, we successfully demonstrate donor-acceptor distance excitation wavelength dependent ultrafast charge separation and charge recombination in newly synthesized, novel tetrads featuring bisferrocene, BF<sub>2</sub>-chelated azadipyrromethane and fullerene entities. The tetrads synthesized using multi-step synthetic procedure revealed characteristic optical, redox and photo reactivities of the individual components and featured 'closely' and 'distantly' positioned donor-acceptor systems. The near-IR emitting BF<sub>2</sub>-chelated azadipyrromethane acted as a photosensitizing electron acceptor along with fullerene while the ferrocene entities acted as electron donor. Both tetrads revealed excitation wavelength dependent

photoinduced electron transfer events as probed by femtosecond transient absorption spectroscopy. That is, formation of Fc<sup>+</sup>-ADP-C<sub>60</sub><sup>-</sup> charge separated state upon C<sub>60</sub> excitation, and Fc<sup>+</sup>-ADP<sup>+</sup>-C<sub>60</sub> formation upon ADP excitation is envisioned.



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