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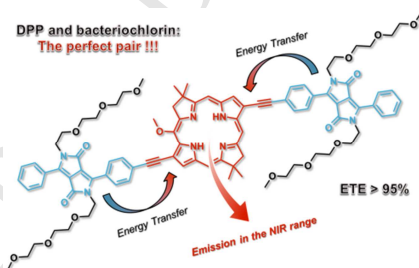
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Abstract The synthesis of unprecedented energy transfer triads containing a near-infrared (NIR) emissive bacteriochlorin subunit and two diketopyrrolopyrrole (DPP) moieties linked to each other *via* ethynyl or zero-carbon spacers is presented. Their optical and fluorescence properties were determined in CHCl₃ and toluene. These photophysical measurements highlight the ability of DPP scaffold to act as an effective energy donor, which once excited in the range 450-550 nm resulting nearly exclusively NIR emission of hydroporphyrin (ETE > 96%). Since DPP dyes are valuable structurally tunable fluorophores that may be used in the construction of high-performance multicomponent photoactive systems, their spectral compatibility with bacteriochlorin chromophore demonstrated through this work, is an important first step toward the rational design of novel and innovative hybrid NIR fluorophores inspired by (bacterio)chlorophylls and suitable for biomedical applications.

Graphical abstract



Keywords Bacteriochlorin, Diketopyrrolopyrrole, Energy-transfer triad, Fluorophore, Near-infrared fluorescence

Highlights

Synthesis of first bacteriochlorin-DPP triads *via* Pd-catalyzed cross-coupling reactions

Investigation of photophysical properties in organic solvents

Nearly quantitative S₁-S₁ energy transfer between DPP and bacteriochlorin in triads

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