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BODIPY Derivatives as Photocatalyst for Oxidative Coupling

Photoredox catalytic organic reactions promoted with visible light have gained much attention recently, allowing to prepare various organic compounds in good yields and selectivity under mild reaction conditions. In this work, we synthesized three iodo-BODIPY derivatives, **I-GB**, **3I-GB** and **I-RB** as a photocatalysts for oxidative coupling of thiol to disulfide. **I-GB** and **I-RB** can be synthesized from the condensation of 4-iodobenzaldehyde with 2,4-dimethylpyrrole and 2-phenylpyrrole, respectively to obtain **I-GB** (20% yield) and **I-RB** (36% yield). Then, iodination of **I-GB** give rise to the formation of **3I-GB** in 58% yield. All BODIPYs are fully characterized with ^{1}H NMR, ^{13}C NMR and mass spectrometry. The 4-chlorothiophenol is used as model to investigate the photocatalytic activity of iodo-BODIPYs and compare with the conventional photocatalyst, Rose Bengal. Under the irradiation with White LED in isopropanol at room temperature, in the presence of three BODIPYs the complete conversion of thiol into the corresponding disulfide are obtain in less than one hour while in Rose Bengal case, more than XX % of starting material remain the reaction mixture. Our finding will be useful for the design of robust organic photocatalyst for photooxidation reaction.

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