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Photocatalytic Activation of Inert Bonds and Their Functionalization via Hydrogen-Evolution Cross-Couplings

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Abstract

Cross-Coupling reactions are potential tools for construction of complex molecular frameworks of diversified interests via formation of carbon-carbon (C-C) or carbon-heteroatom (C-X) linkage. Compared with conventional transition metal-catalyzed cross-couplings and oxidative cross-couplings, photocatalytic hydrogen-evolution cross-couplings allow used of less functionalized reagents and proceed without any sacrificial oxidant under mild conditions and by visible-light irradiation. The reactions generally afford the desired cross-coupling products with excellent yields, and hydrogen gas is the only byproduct. In this presentation we will highlight the progress of these reactions in our group.

Keywords: Photocatalytic hydrogen-evolution; Photocatalytic cross-coupling reactions; Activation of inert bonds; Transient absorption spectroscopy.

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