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Blue LED-driven C-N bond formation for synthesis of imidazopyridines

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The formation of C-N bonds has emerged as a powerful key for structural modifications in organic synthesis. Although transition metal-free procedures provide a viable protocol to construct hetero molecules, the use of costly catalysts and high temperatures has restricted universal applicability. Moreover, radical-based C-N bond formation without the assistance of a transition metal catalyst has been a great challenge. Herein we report the blue LED-driven transition metal-free strategy for C-N bond formation. This reaction features easy-to-handle, mild reaction conditions, reactants and good functional group tolerance. The mechanistic investigation suggests that this strategy proceeds through phenacyl bromide radical precursor and NBS reaction mediated by H_2O to construct IPs.

Keywords: Blue LED irradiation (BLI), C-N bond formation, Transition metal-free, IPs