

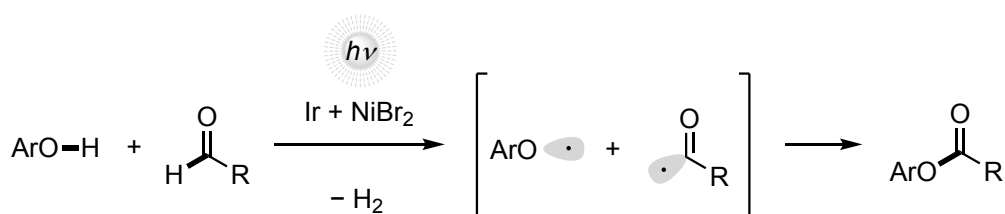
## Development of a Dehydrogenative Coupling Reaction of Phenols with Aldehydes

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Herein is reported a convenient method to acylate phenolic hydroxyl groups with aldehydes.<sup>1</sup> We recently reported a photo-induced dehydrogenative coupling reaction of alkylarenes with aldehydes, which was facilitated by collaboration of an iridium photoredox catalyst and a nickel catalyst.<sup>2</sup> When the reaction conditions were applied to a solution of 4-*tert*-butylphenol and varelaldehyde, 4-*tert*-butylphenyl pentanoate was obtained in 96% yield, involving gaseous hydrogen. Results of mechanistic studies implied that a phenoxy radical and an acyl radical cross-coupled. A phenolic hydroxy group was selectively acylated in preference to alkyl-substituted hydroxy groups, probably thanks to the unique reaction mechanism.

The dehydrogenative coupling of phenols and aldehydes was extended to a dehydrogenative coupling reaction of primary alcohols with phenols.<sup>3</sup> A primary alcohol was initially dehydrogenated by the visible light/iridium/nickel dibromide system to generate transiently the corresponding aldehyde that sequentially coupled with a phenol forming the phenyl ester.



1) T. Kawasaki, N. Ishida, M. Murakami, *Angew. Chem. Int. Ed.* **2020**, 59, 18267. 2) T. Kawasaki, N. Ishida, M. Murakami, *J. Am. Chem. Soc.* **2020**, 142, 3366. 3) T. Kawasaki, T. Tosaki, N. Ishida, M. Murakami, *Org. Lett.* **2021**, 23, 7683.