

PHOTOREDOX / NICKEL-CATALYZED CARBAMOYLATION OF (HETERO)ARYL BROMIDES

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Amides are important scaffolds found in synthetic materials, bioactive molecules and pharmaceuticals.¹ Metal-catalyzed amide formation provides an attractive alternative to classical dehydrative condensation methods.² However, the scope and the practicality of this approach are limited by the requirement of harsh conditions, sensitive reagents and gaseous carbon monoxide. Here, we report a strategy for the carbamylation of (hetero)aryl electrophiles based on the combination of nickel catalysis and photoredox catalysis.³ This cross-coupling approach uses readily available 1,4-dihydropyridines **1**, which serve as precursors to carbamoyl radicals **I**, and a wide variety of (hetero)aryl bromides **2** as coupling partners. The carbamylation protocol provides a vast array of (hetero)benzamides **3** in good to excellent efficiency with high functional-group compatibility.

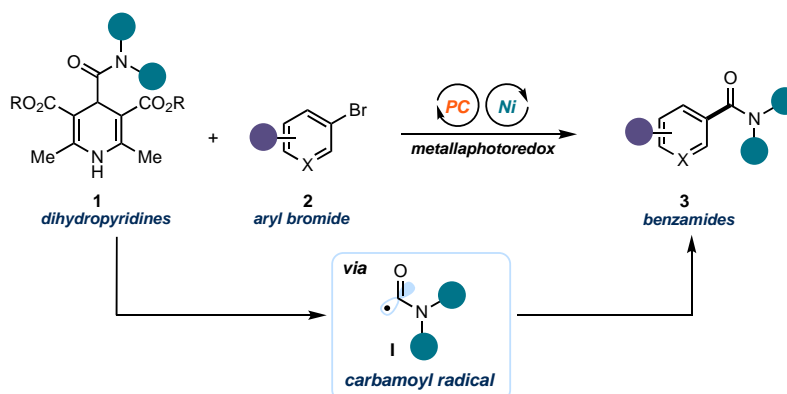


Figure 1. Photochemical Approach to Benzamides

[1] V. R. Pattabiraman, J. W. Bode, *Nature* **2011**, *480*, 471.

[2] C. L. Allen, J. M. J. Williams, *Chem. Soc. Rev.* **2011**, *40*, 3405.

[3] J. A. Milligan, J. P. Phelan, S. O. Badir, G. A. Molander, *Angew. Chem. Int. Ed.* **2019**, DOI 10.1002/anie.201809431.