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Abstract

N-arylated heterocycles are widely found in pharmaceuticals, agrochemicals, and functional materials. As a result, significant efforts have been dedicated to the development of efficient and versatile methods for N-arylation. However, these protocols are often stymied by the need to require stoichiometric amount of the base, high reaction temperatures and harsh reaction conditions. Han and coworkers reported a green and atom-economical aerobic oxidation of tetrazoles with a variety of hetero(aryl) boronates in presence of catalytic Cu2O in DMSO at 100 °C in the absence of any organic bases or ligands. In this study, I determined that this protocol can be extended for the *N*-arylation of aryl tetrazolones utilizing Cu2O nanoparticles to afford 1,4-diaryl tetrazolones. I also studied the solvent effects and the size-dependent catalytic activity of different sizes of Cu2O nanoparticles for this C-N coupling reaction. I found that *N*-arylation with nanoparticles proceeds faster and in higher yields compared to the amorphous catalyst. Owing to their importance in pharmacokinetics and scarcity in literature, I obtained crystal structures of 1,4-diaryl tetrazolones. The results of this study warrant further investigation into the scope of *N*-arylation of other nitrogen-containing motifs with aryl boronic acids.

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