Oxidative Synthesis of 1,2,4-Triazoles via Heterogeneous Cu-Zn/Al-Ti-Catalyzed Cyclization

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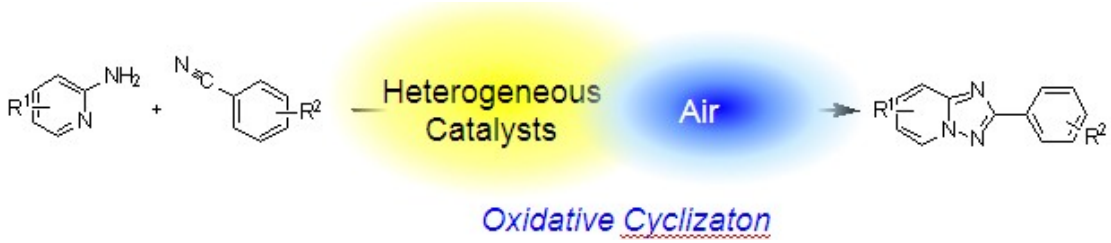
Abstract:

A simple and inexpensive heterogeneous catalyst CuO_x-ZnO/Al-Ti was successfully employed into cyclized synthesis of 1,2,4-triazoles. This is the first time to synthesize 1,2,4-triazoles between benzonitrile and 2-aminopyridine using oxidative catalytic heterogeneous conditions and eventually the yield is enhanced to 83%. Additionally, the optimizing experiments show using 2 mol% catalyst and cheap air as green oxidant at relative high reaction temperature can bring about the best reaction results. The work about expanding the scope of the reaction under the optimized conditions and examining the reused ability of the heterogeneous catalyst is going on.



Advantages: Green Chemistry
ligand-free and cocatalyst-free
low-amount of catalyst
air as green oxidant