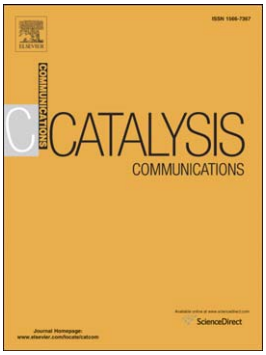

Efficient multicomponent synthesis of propargylamines catalyzed by copper nanoparticles supported on metal-organic framework derived nanoporous carbon

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Efficient multicomponent synthesis of propargylamines catalyzed by copper nanoparticles supported on metal-organic framework derived nanoporous carbon

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Abstract: Cu nanoparticles were deposited on nanoporous carbon, MOF-5-C, which was fabricated by direct carbonization of MOF-5 without any additional carbon sources. The as-obtained catalyst (Cu@MOF-5-C) exhibited high catalytic activity due to the high surface area as well as hierarchical pores of MOF-5-C, and the synergetic interaction between the metal nanoparticles and support.

Keywords: Metal-organic-framework derived porous carbon; Copper; Catalysis; Propargylamines

1. Introduction

The challenge for green and sustainable development demands more efficient chemical transformation with no or less waste emission [1], so green chemistry based on the conception of atom economy has received considerable attention over the last few years. In this connection, lots of multicomponent reactions have been designed for the synthesis of various complex molecules, and these reactions have the fundamental advantages of minimizing chemical waste generation, lowering costs, increasing atom-economy, saving energy and time, and avoiding expensive purification processes [2-4]. The A^3 coupling (the aldehyde-alkyne-amine reaction) is a typical example, where propargylamines are produced as the products [5, 6].

Recently, propargylamines have gained considerable attention owing to their widely applications in drug discovery for the synthesis of various nitrogen-containing biologically active compounds, such as oxazoles, *β*-lactam, pyrrolidines [7-9]. Many methods including activation C–