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Communication

Room temperature multicomponent synthesis of diverse propargylamines using magnetic $CuFe_2O_4$ nanoparticle as an efficient and reusable catalyst

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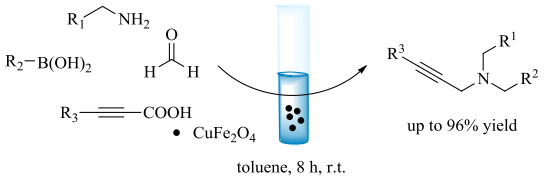
Graphical abstract



We report the magnetic recoverable catalyst ($CuFe_2O_4$) catalyzed multicomponent reaction of aliphatic amines, formaldehyde, arylboronic acids and alkynyl carboxylic acids for the synthesis of diverse propargylamines at room temperature.

ABSTRACT

Copper ferrite ($CuFe_2O_4$) nanoparticles catalyzed room temperature multicomponent reaction of aliphatic amines, formaldehyde, arylboronic acids and alkynyl carboxylic acids was reported for the synthesis of diverse propargylamines with good to excellent yields. The catalyst can be magnetically recovered and reused at least five times without significant loss of activity.

Keywords: Multicomponent reaction, Magnetic catalyst, Recycle, Copper ferrite, Propargylamine

Catalysts are widely used to provide energy efficient, selective, atom-economical solutions to many industrially important problems in organic chemistry synthesis [1]. Recently, magnetic nanoparticles, which can be easily separated and recycled by external magnet, have been efficiently employed as heterogeneous catalysts and supports of catalysts in many chemical reactions [2]. Compared to filtration or centrifugation, magnetic separation handles easily and can increase the reusability. And it is generally recognized that the use of these nanosized magnetic particles provides both economical and ecological benefits [3]. Among the magnetic nanoparticle catalysts, the direct use of magnetic metal oxide nanoparticles as catalysts has attracted more and more attention. In 2010, Sreedhar reported Fe_3O_4 nanoparticles catalyzed three-component coupling of aldehyde, amine, and alkyne through C-H activation for the

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