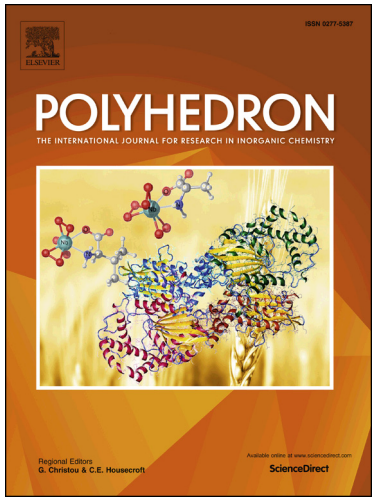

Synthesis of secondary amides by direct amidation using polymer supported copper(II) complex

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Synthesis of secondary amides by direct amidation using polymer supported copper(II) complex

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Abstract A new polymer supported Cu(II) complex has been synthesized and characterized by CHN analyses, IR and UV–Vis spectral studies, ESR and thermogravimetric analyses, ICP-OES, surface area measurements. This complex was screened for their catalytic study towards the direct amidation reaction. The effects of solvents, reaction time, temperature and catalyst amount for the direct formation of amides from aldehydes and benzylamine with the aid of heterogeneous copper complex were reported. The polymer supported Cu(II) catalyst could be reused more than five times without appreciable loss of its initial activity. The plausible reaction mechanism has been proposed. The catalytic activity of the unsupported complex was also compared with the polymer supported Cu(II) complex.

Keywords Cu(PS-BBMA)Cl_2, Direct amidation, Heterogeneous catalysis, Benzyl amine

Introduction

Amide functionality is well known due to its stability, high polarity and conformational diversity and constitute the most abundant motif in synthesis and medicinal chemistry [1]. They are found in compounds with anticancer, antihypertensive, antiinflammatory, antiallergic, antimigraine, and antiviral activities [2-4]. Due to the broad application of amides and sulfonamides, finding new, efficient and practical methods for their synthesis is desirable. Amides are produced in enormous amounts every year, thus, environmental friendly and selective methods for their formation are of great importance.

The most prevalent and straight forward approach to amide bond formation is the condensation of an amine with a carboxylic acid derivative [5-7]. On the other hand, due to instability of