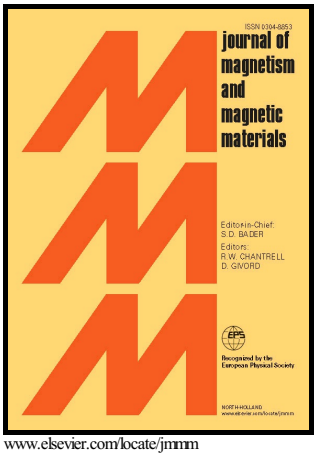

www.elsevier.com/locate/jmmm

A new magnetically recoverable catalyst promoting the synthesis of 1,4-dihydropyridine and polyhydroquinoline derivatives via the Hantzsch condensation under solvent-free conditions

Fariba Heidarizadeh

PII: S0304-8853(16)31297-5
DOI: http://dx.doi.org/10.1016/j.jmmm.2016.09.099
Reference: MAGMA61880

To appear in: *Journal of Magnetism and Magnetic Materials*

Received date: 30 June 2016
Revised date: 16 September 2016
Accepted date: 21 September 2016

Cite this article as: Fariba Heidarizadeh, A new magnetically recoverable catalys promoting the synthesis of 1,4-dihydropyridine and polyhydroquinolin derivatives via the Hantzsch condensation under solvent-free conditions, *Journa of Magnetism and Magnetic Materials* http://dx.doi.org/10.1016/j.jmmm.2016.09.099

A new magnetically recoverable catalyst promoting the synthesis of 1,4-dihydropyridine and polyhydroquinoline derivatives via the Hantzsch condensation under solvent-free conditions

fariba heidarizadeh

Abstract

In the current study, 1,4-dihydropyridine and polyhydroquinoline derivatives were efficiently synthesized under solvent-less conditions with a magnetic catalyst containing novel acidic ionic liquid functionalized silica modified Fe_3O_4 nanoparticles through a four component combination of β-ketoester, aldehydes and ammonium acetate (1, 2, 2). Several approaches have been reported for synthesising these derivatives, while each of these approaches have some weaknesses including long time of reaction, excess of volatile organic solvent, low efficiency, costly reagents, complex operation, high temperatures, production of a number of side products, and difficult catalyst recovery. The simple operation, short time of reaction (5–30 min) and the high efficiency (80–94%) are the special advantages of this technique. The immobilized catalyst exhibited an appropriate thermal stability and excellent recyclability. Different methods such as FT-IR, SEM, EDX, TGA-DTA, and VSM were used to confirm and characterize the catalyst.

Keyworks: Magnetic catalyst; Acidic ionic Liquid; Hantzsch condensation; Heterogenous Catalyst; solvent-free conditions

Introduction

The specific features of ionic liquids (ILs) including wide range of liquid temperature, undetectable vapour pressure, excellent thermal stability, and high solubility cause them to be extensively used as an eco-friendly reaction medium or catalysts.[1] Excellent catalytic activity