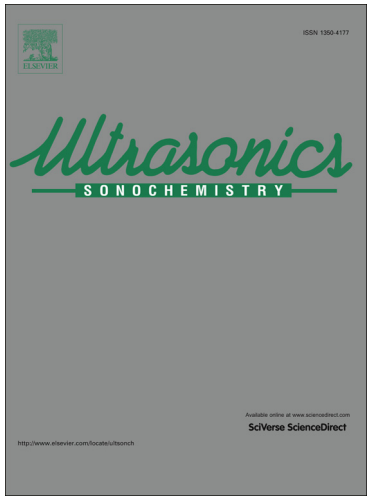

Sonochemical rate enhanced by a new nanomagnetic embedded core/shell nanoparticles and catalytic performace in the multicomponent synthesis of pyridoimidazoisoquinolines

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Sonochemical rate enhanced by a new nanomagnetic embedded core/shell nanoparticles and catalytic performace in the multicomponent synthesis of pyridoimidazoisoquinolines

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Abstract

A sonochemical approach for the one-pot three-component synthesis of pyridoimidazoisoquinolines via by using phthalaldehyde, trimethylsilylcyanide and aminopyridines the presence of a catalytic amount of a new nanomagnetic catalyst Fe_3O_4@SiO_2-CO-C_6H_4-NH_2 is described. The characterization of the nanocatalyst and the product was done by various methods, such as FT-IR, SEM, EDX, TGA/DTA, NMR, MS and CHN analyses. This is the first design, preparation, characterization and application of the present core/shell nanomaterial and also the first ultrasound irradiated synthesis of the biologically and pharmaceutically important fused polycyclic compounds in ethanol as a green solvent. This novel protocol offers several advantages such as high yields, short reaction times, environmentally-friendly reaction media, easily isolation of the products, simple preparation and recoverability of the nanocatalyst by an external magnet and reusing several times without significant decrease in catalytic activity.

Keywords: Sonochemistry; Ultrasonic irradiation; Core/shell magnetic nanoparticles; Nanostructure catalyst; Pyridoimidazoisoquinolines; Green chemistry.