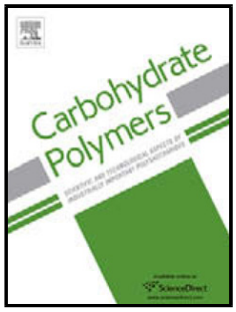

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Green cellulose-based nanocomposite catalyst: design and facile performance in aqueous synthesis of pyranopyrimidines and pyrazolopyranopyrimidines

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Highlights

- A nanobiocomposite was prepared by using a natural carbohydrate polymer, cellulose.
- It was characterized by FT-IR, EDX, TEM, FE-SEM, TG/DTA, VSM and ICP-AES analyses.
- Average size distribution of Fe_3O_4 magnetic nanoparticles in cellulose matrix was 25 nm.
- Morphology of the biopolymer-based recoverable nanocatalyst was nearly uniform.
- Various heterocycles were synthesized by the nanocatalyst in H_2O as a green solvent.

Abstract

A cellulose-based nanobiocomposite decorated with Fe_3O_4 nanoparticles was prepared, characterized and applied as an easily recoverable and reusable green nanocatalyst in the synthesis of pyrano[2,3-*d*]pyrimidine derivatives in water at room temperature. The characterization was performed by using a variety of conventional analytical instruments such as Fourier transform infrared spectra (FT-IR), field emission scanning electron microscopy (FE-SEM), transmission electron microscopy (TEM), energy dispersive X-ray (EDX), vibrating sample magnetometer (VSM), thermal analysis (TGA/DTA) and inductively coupled plasma atomic emission spectroscopy (ICP-AES) analyses. Two series of pyranopyrimidine and pyrazolopyranopyrimidines derivatives were synthesized by using the present cellulose-based nanocomposite. This protocol has valuable features like high yield of the products, short reaction