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H₃PMo₁₂O₄₀ immobilized chitosan/Fe₃O₄ as a novel efficient, green and recyclable nanocatalyst in the synthesis of pyrano-pyrazole derivatives

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Abstract

A novel nanomagnetic composite heteropolyacid immobilized chitosan/Fe₃O₄ was prepared via a facile one-pot synthetic approach. This magnetically recoverable nanocatalyst, H₃PMo₁₂O₄₀/chitosan/Fe₃O₄ (PMo/chit/Fe₃O₄), was fully characterized by XRD, FTIR, SEM and EDX analysis methods. A rapid, efficient and the chemoselective synthesis of different pyrano-pyrazole derivatives was achieved in excellent yields via a one-pot four-component reaction in the presence of catalytic amount of PMo/Chit/Fe₃O₄.

Keywords

Green chemistry, Heterogeneous catalysis, Heteropolyacids, Magnetic catalyst, MCRs, Multicomponent reaction, One-pot reactions, Pyrano-pyrazoles.