

Synthesis of 2-amino-4,6-diarylnicotinonitrile in the presence of $\text{CoFe}_2\text{O}_4@\text{SiO}_2\text{-SO}_3\text{H}$ as a reusable solid acid nanocatalyst under microwave irradiation in solvent-free conditions

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Streszczenie

The modification of silica-coated CoFe_2O_4 magnetic nanoparticles ($\text{CoFe}_2\text{O}_4@\text{SiO}_2$) with chlorosulfonic acid, which can be utilized as an organic-inorganic hybrid heterogeneous catalyst, introduces an astonishing and efficient system for the synthesis and simplicity of the recovery of the catalyst. The applied CoFe_2O_4 magnetic nanoparticles are 22.98–45.30 nm measured that can be utilized as a catalyst for the preparation of 2-amino-4,6-diarylnicotinonitrile under microwave irradiation in solvent-free conditions by four component reaction of aromatic acetophenone, aldehydes analogues, malononitrile and ammonium acetate. The so synthesized magnetic nanocatalyst was characterized by X-ray powder diffraction, SEM, TGA and FT-IR techniques. This simple protocol suggests advantages such as shorter reaction times, high yield, catalyst recovery, achieving the high purity of products by simple recrystallization and facile work-up. Other noticeable characteristics contain the catalyst can be recovered at least five times without any clear decrease in its catalytic activity.

Słowa kluczowe

Cobalt ferrite, magnetic nanoparticles, microwave irradiation, Solvent-free, 2-Amino-4, 6-diarylnicotinonitrile

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<http://link.springer.com>