

Sulfonic acid-functionalized silica-coated magnetic nanoparticles as a reusable catalyst for the preparation of pyrrolidinone derivatives under eco-friendly conditions.

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Streszczenie

The surface of silica-coated CoFe_2O_4 magnetic nanoparticles ($\text{CoFe}_2\text{O}_4@\text{SiO}_2$), which is resistant to the oxidation due to silicone coating, was functionalized using chlorosulfonic acid and used as an efficient and recyclable catalyst for the preparation of 3-pyrrolin-2-ones from diethyl acetylenedicarboxylate, an aldehyde and aniline in ethanol solvent at 60 °C. In the presented study, some fascinating characteristics of such catalyst, such as magnetically separable, simple workup and obtaining a high purity of products by simple recrystallization, have been successfully obtained. The structural features of $\text{CoFe}_2\text{O}_4@\text{SiO}_2\text{-SO}_3\text{H}$ catalyst were elucidated by X-ray powder diffraction (XRPD), thermogravimetric studying (TGA), scanning electron microscopy (SEM) and FT-IR spectra.

Słowa kluczowe

Cobalt ferrite, Silica-coated, Sulfonic acid-functionalized, Reusable catalyst, Magnetic nanoparticles, 3-pyrrolin-2-ones

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