





An efficient catalytic method for the Suzuki reaction and oxidation of sulfides by using novel magnetic nanoparticles (SnFe_2O_4) as a reusable catalyst

[Ali M. Hussein](#)^a, [Jayanti Makasana](#)^b, [Suhas Ballal](#)^c, [Anjan Kumar](#)^d  , [Bhanu Juneja](#)^e,
[Piyus Kumar Pathak](#)^f, [G Sridevi](#)^g, [Salwa Bader AlReshaidan](#)^h, [Mohammed A. El-Meligy](#)^{i,l},
[Marwea Al-hedrewy](#)^{j,k}

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<https://doi.org/10.1016/j.molstruc.2024.140538> 

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Highlights

- $\text{SnFe}_2\text{O}_4@\text{SiO}_2\text{-S-C}-\text{Cu}$ show superior activity in the Suzuki reaction and oxidation of sulfides.
- The products were produced in excellent yields under mild conditions.
- Catalyst can be recovered and reused without decreasing catalytic activity.
- The catalyst can be reused at least eight consecutive cycles.

Abstract

In this study, we focused on the deposition of copper nanoparticles onto Cinchonine-functionalized SnFe_2O_4 magnetic nanoparticles. This environmentally friendly heterogeneous catalyst was thoroughly analyzed using a variety of techniques including SEM, EDS, TGA, TEM, VSM, XRD, ICP, XPS and FT-IR. In addition, it demonstrated outstanding performance as a catalyst for Suzuki reactions and the oxidation of sulfides in environmentally sustainable conditions. The catalyst could be effortlessly separated from the mixture and reused for up to four cycles without any decrease in its catalytic efficacy. This method provides the advantages of a simple procedure, high yields of products, convenient handling, environmentally friendly conditions, and short reaction times.