

Synthesis of Nickel Hexacyanoferrate Nanoparticles and Their Potential as Heterogeneous Catalysts for the Solvent-Free Oxidation of Benzyl Alcohol

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摘要 Nickel hexacyanoferrate nanoparticles were synthesized and characterized using elemental analysis, thermal analysis, infrared spectroscopy, and X-ray diffraction. A FE-SEM image of the nickel hexacyanoferrate showed that it consists of nearly spherical particles with sizes ranging from 30 to 70 nm. The synthesized material was found to be a heterogeneous catalyst useful for the solvent-free oxidation of benzyl alcohol with H₂O₂ as an oxidant. A 36% conversion of benzyl alcohol to benzaldehyde was achieved under optimized reaction conditions using specific parameters such as the amount of catalyst, the temperature, the benzyl alcohol to H₂O₂ molar ratio, and the reaction time.

关键词: [hexacyanoferrate nanoparticle](#) [heterogeneous catalyst](#) [benzyl alcohol](#) [benzaldehyde](#)

Abstract: Nickel hexacyanoferrate nanoparticles were synthesized and characterized using elemental analysis, thermal analysis, infrared spectroscopy, and X-ray diffraction. A FE-SEM image of the nickel hexacyanoferrate showed that it consists of nearly spherical particles with sizes ranging from 30 to 70 nm. The synthesized material was found to be a heterogeneous catalyst useful for the solvent-free oxidation of benzyl alcohol with H₂O₂ as an oxidant. A 36% conversion of benzyl alcohol to benzaldehyde was achieved under optimized reaction conditions using specific parameters such as the amount of catalyst, the temperature, the benzyl alcohol to H₂O₂ molar ratio, and the reaction time.

Keywords: [hexacyanoferrate nanoparticle](#), [heterogeneous catalyst](#), [benzyl alcohol](#), [benzaldehyde](#)

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