Hetero-Fenton Degradation of Methyl orange and Rhodamine B using inverse spinel Cobalt ferrite nanomaterial

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Abstract

Due to its implausible and incredible properties, mainly its optical and magnetic nanoparticles have consideration for inverse spinel cobalt ferrite ($CoFe_2O_4$). $CoFe_2O_4$ nanoparticles were synthesised with an easy and economically viable sol-gel route. The as-synthesised $CoFe_2O_4$ structural and crystallite size was characterized by powder X-Ray Diffraction. Studies of UV-visible Diffused reflectance spectrum and photoluminescence reveal the significant optical properties and their band gap was calculated using the Kubelka-Munk plot. The influence of operational parameters under UV-A light irradiation, such as initial pH and H_2O_2 concentrations of Rhodamine B (RhB) and Methyl orange (MO) degradation has been investigated. The reusability of the catalyst is also checked. The synthesized cobalt ferrite nano catalyst was plan for its application of RhB and MO dyes in the Photo-Fenton, which is a very important organic dye used in textile industries.

Keywords: Cobalt ferrite, Sol-gel, Rhodamine B, Methyl Orange, Photo-Fenton

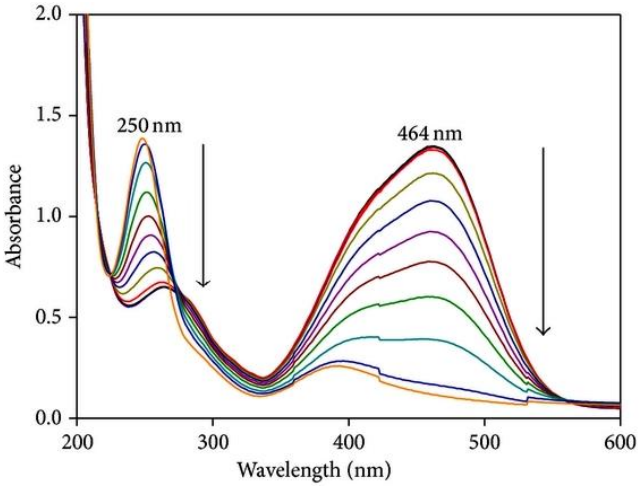


Fig (a)

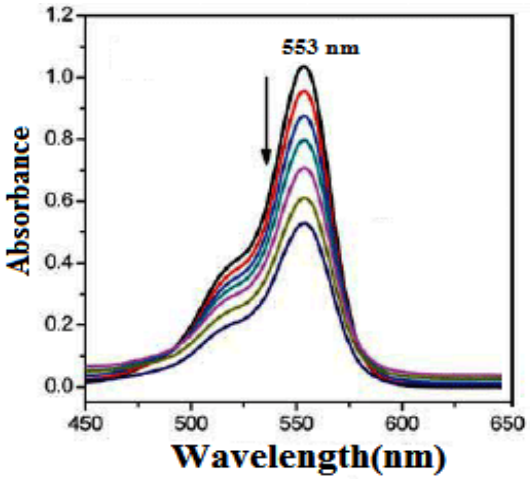


Fig (b)

UV-Vis absorbance spectra at different time intervals of Methyl Orange (MO) fig. (a) and Rhodamine B (Rh B) fig. (b) dyes