



Green Synthesis of Fe_2O_3 Nanoparticles and its Application towards Kinetic Studies on Degradation of Methyl Orange

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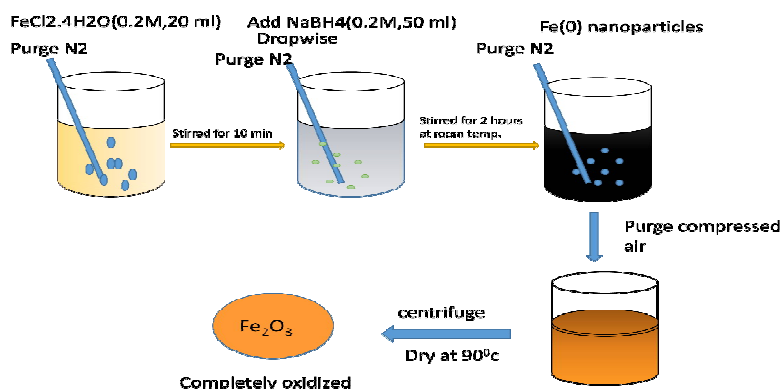
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ABSTRACT

Worldwide researchers have been engaged in developing and improving a more efficient method to deal with increasingly rigorous organic dye pollution. In the present work, focus was on benign synthesis of iron oxide (Fe_2O_3) nanoparticles and environmental remediation by degradation of dyes like methyl orange found in waste water of dyes, textile, and pharmaceutical and chemical industries using synthesized iron oxide nanoparticles. These Fe_2O_3 nanoparticles were found to be acts as a prospective catalyst for the degradation of methyl orange in the presence of sodium borohydride. Rate constants for the catalyzed and uncatalyzed reactions were determined. The catalyzed reaction spectrum had shown abrupt fall in absorbance value confirming catalytic effect of Iron oxide nanoparticles. No significant change in the absorbance in case of uncatalyzed reaction was observed, indicating very slow reduction rate of methyl orange.

Graphical abstract



Schematic Representation of Synthesis of Fe_2O_3 Nanoparticles.

Keywords: Methyl orange, Iron nanoparticles, UV-Visible Spectroscopy, Rate Constant.