

## Article Abstract

Title:	Synthesis and applications of nano-structured iron oxides/hydroxides – a review
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Abstract:	The nano iron oxides have been synthesized by almost all the known wet chemical methods which include precipitation at ambient/elevated temperatures, surfactant mediation, emulsion/micro-emulsion, electro-deposition etc. Iron oxides in nano-scale have exhibited great potential for their applications as catalytic materials, wastewater treatment adsorbents, pigments, flocculants, coatings, gas sensors, ion exchangers, magnetic recording devices, magnetic data storage devices, toners and inks for xerography, magnetic resonance imaging, bioseparation and medicine. Nano sized magnetite $\text{Fe}_3\text{O}_4$ , and maghemite $\gamma\text{-Fe}_2\text{O}_3$ exhibiting excellent magnetic properties find applications for biomedical purposes and as soft ferrites. Iron hydroxides and oxyhydroxides such as ferrihydrite, goethite, akaganeite, lepidocrocite are being evaluated for their applications in water purification for the removal of toxic ions. Hematite, $\alpha\text{-Fe}_2\text{O}_3$ in the nano range has been used to obtain transparent paints. In catalysis both iron oxides and hydroxides find application in numerous synthesis processes. This review outlines the work being carried out on synthesis of iron oxides in nano form and their various applications.
Keywords:	Nano iron oxides, synthesis, catalysts, magnetic properties, biomedical application