

## The effect of magnetic field on synthesis of magnetic iron oxide nanoparticles

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Iron oxide nanoparticles have many applications in magnetic storage devices, catalysis, sensors, high-sensitivity biomolecular magnetic resonance imaging (MRI), pigments in dental composites and so on. They are biocompatible and are non-toxic to human body. Co-precipitation, Micro-emulsions and High-temperature decomposition of organic precursors are more important methods of synthesis of iron oxide nanoparticles. We are interested in synthesis of iron oxide nanoparticles by Coprecipitation method. We solve FeCl<sub>3</sub> and FeCl<sub>2</sub> in distilled water and to gain small particles we add two surfactants named CTAB and SDS to solution. After that we gutty add ammoniac to our solution to sediment of the sample until PH becomes 7. After washing the sample with distilled water and drying it, we characterize the sample by Fourier transform infra red spectrum (FT-IR), X-ray diffraction (XRD), Transmission electron microscopy (TEM), Vibrating sample magnetometer (VSM) and after that we repeat this experiment in presence of magnetic field with determined magnitude and study the effect of magnetic field on the size distribution and properties of these nanoparticles.

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