

عنوان مقاله:

Preparation of Colloidal Suspension of Nano Size Magnetite

محل انتشار:

همایش ملی مواد نو (سال: 1387)

تعداد صفحات اصل مقاله: 14

نویسندگان:

Mohammad Edrissi

Reza Rezaei - Faculty of Chemical Engineering, Amirkabir University of Technology, Tehran, Iran

Bahram Nassernejad

خلاصه مقاله:

The relatively pure Fe₃O₄ nanoparticles was synthesized by microwave hydrothermal (MWH) and sonocation-assisted co-precipitation. The precipitating agent was 0.5% hexamine in 10% ammonia solution. This was added to 100 ml of 0.01 M HCl containing stoichiometric amount of stable salt of Fe³⁺ and Fe²⁺ ions. The formaldehyde produced from hydrolysis of hexamine prevents partial oxidation of Fe²⁺ during the precipitation process. For stabilization of colloidal suspension a small amount of a bifunctional fatty acid was used to coat the Fe₃O₄ nanoparticles and make them hydrophobic. The extraction of Fe₃O₄ nanoparticles from aqueous phase into chloroform gave a stable magnetite suspension which was attracted by a magnet. The product was analyzed by XRD, LLS, EDX and quantities chemical analysis of iron content in magnetite. The average diameter of nanoparticles was found to be about 6.2 nm. The order of main factors according to their effectiveness on the yield of product was determined using a factorial design and ANOVA.

کلمات کلیدی:

magnetite, nanoparticles, hexamine, microwave, sonocation, factorial design

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/50600>

