عنوان مقاله:

Preparation of magnetite nanoparticles containing amide polymerizable functional groups

محل انتشار:

ششمین کنگره بین المللی مهندسی شیمی (سال: 1388)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this work precipitation method was applied for the synthesis of Fe3O4 (magnetite) nanoparticles from iron chloride (II) and (III). For precipitating these particles, alkali solutions of NaOH or ammonia were used. Different parameters were investigated to identify each parameter effect on the final particle size. Comparison of the results showed that the particle size will decrease with increasing reaction temperature, stirring speed and decrease in reaction time. Magnetic properties of particles were studied by VSM analysis. Average particle size of Fe3O4 nanoparticles were10 to 30 nanometer obtained from SEM. For investigation of affecting parameters on particles on average crystal size, XRD spectra and subsequent Scherrer equation formulas' were used. In the next step, 3-aminopropyl triethoxysilane (APTES) was used for modifying magnetite nanoparticles surface (m-MNPs). Elemental analysis was employed for assuring of suitable coating of APTES and FT-IR technique was applied for determination and characterization of functional groups. At last, acryloyl chloride was used for preparing of polymerizable m-MNPs. Thermal stability and weight loss of different samples were studied by TGA and confirmed our previous data.

کلمات کلیدی:

Aminopropyltriethoxysilan, Superparamagnetism, Magnetite, Nanoparticles, XRD