

عنوان مقاله:

Synthesis, of Polyaniline clay nanocomposites and study of their properties

محل انتشار:

همایش منطقه ای شیمی (سال: 1389)

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خلاصه مقاله:

Nanocomposites are a special class of material having unique physical properties and wide application potential in diverse areas. Novel properties of nano composites can be obtained by the successful combination of the characteristics of parent constituents in to a single material. Encapsulation of inorganic nano particles in side the shell of conducting polymers is the most popular and interesting aspect of nanocomposites synthesis. This fields include polymer science in a way that only nano polymer branch has lots of different topics including micro electronics (now referred to as nano electronics) which is used to design instruments below 100 nm diameters, drug delivery by nano particles, nano polymeric catalyst, electro cells. Polyaniline (PANI) is typical representative of conducting polymer [1,2]. In this research polyaniline (PANI) encapsulated with clay nano particles to form PANI/Clay nano composite. This was done by oxidizing of aniline by hydrochloride with ammonium proxo disulfate in presence of different amounts of clay nano particles. The obtained composites characterized by X-ray diffraction (XRD), fourier-transform infrared spectroscopy (FTIR), scanning electron microscope (SEM), thermo gravimetric analysis (TGA). Conductivity of nano composites was also investigated by four point probe technique. TGA results suggest that the trend of degradation curve of nano composites is similar to that of polyaniline, but their composition temperature have been decreased. Conductivity results show that by increasing clay content in composite structure, conductivity increase slightly. The electronic micrograp shows the PANI/ Clay nano composites form spherical structures. The SEM image of a broken sphere clearly reveals the hollow figure of the spherical structures. FTIR spectra shows that PANI, Clay nano particles are not simply blended or mixed up, but a strong interaction exists at the interface of nano- Clay and .PANI

کلمات کلیدی:

لینک ثابت مقاله در پایگاه سیویلیکا:

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