عنوان مقاله:

Preparation and Characterization of High Specific Surface Area γ-Alumina Nanoparticles Via Sol-Gel Method

محل انتشار:

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خلاصه مقاله:

In the present investigation, γ-alumina nanoparticles with particle sizes less than ۱۰ nm, high specific surface area (۳۵۱ m۲/g), high pore volumes and relatively narrow pore sizes distribution was prepared via sol-gel method in presence of aluminum isopropoxide as an aluminum precursor, distilled water, acetic acid as hydrolysis rate controller and tert-butanol as solvent. They had meso and macro porosities which the most of pores are in cylindrical shape. The received powder was characterized by simultaneous thermal analysis (STA) method. The calcined γ-alumina nanoparticles were characterized using X-ray diffractometer (XRD), Field Emission Scanning Electron Microscopy (FESEM), Fourier Transform Infrared Spectroscopy (FTIR) and nitrogen adsorption-desorption techniques. This study revealed that the precursor and solvent types, weight ratios of reactants, calcination temperatures and times were important factors to preparation of γ-alumina with high surface area and well defined narrow pore size distribution for heavy metals adsorption.

کلمات کلیدی:

γ-Alumina, Nanoparticles, Sol-Gel, Aluminum Isopropoxide, Textural Properties