عنوان مقاله:

Surfactant free synthesis and characterization of NiFe۲O۴ nanorods

محل انتشار:

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خلاصه مقاله:

In this research, NiFe۲O۴ nanorods were synthesized and characterized. These ۱D nanostructure were prepared with a new procedure via decomposition of NiFe۲(C۲O۴)۳ precursor, which was synthesized by hydrothermal method without using any surfactant agents. X-Ray diffraction (XRD) studies of the NiFe۲(C۲O۴)۳ precursor and final products showed that calcination is an essential process and the obtained products were single phase and crystallizeferrite cube structure without any impurity and secondary phases were obtained. The crystallite size of the nanoparticles that are interconnected to each other and making the nanorod structures were ۴ nm and ۱۱.۴ nm for the samples calcined at ۵۵۰ °C and ۷۰۰ °C, respectively. Field emission scanning electron microscopy (FESEM) images show the nanorod shape with several micrometer length and an average diameter about ۲۷ nm and ۳۹ nm. It's clear the nanorodassembles by a large number of interconnected nanoparticles with small size. Also the large number of pores on the surface of these particles are obvious and are expected as a result of synthesis media. So, these characteristics and also high pores on the surface are superior for achieving high gas and chemical sensitivity due to high specific area and low density and we are determined about using these samples to making successful gas sensors.

کلمات کلیدی:

Nickel ferrite, Nano rod, Hydrothermal, Magnetic materials.

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