

عنوان مقاله:

Sodium borohydride Synthesis of Iron Cobalt (FeCo) Nanorods

محل انتشار:

کنفرانس بین المللی پژوهش در علوم و مهندسی (سال: 1395)

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نویسندگان:

Sarvin Honarbaksh - *M.Sc., Department of Physics, Varamin Pishva Branch, Islamis Azad University, Varamin, Iran*

Majid Farahmandjou - *Associate Professor., Department of Physics, Varamin Pishva Branch, Islamis Azad University, Varamin, Iran*

Saeed Behroozinia - *Associate Professor., Laser and Optic Research School, Nuclear Science and Technology Research School, Atomic Energy Organization of Iran, Tehran, Iran*

خلاصه مقاله:

FeCo (Iron cobalt) nanoparticles were synthesized by iron sulfate ($\text{Fe}(\text{SO}_4)_3 \cdot \text{XH}_2\text{O}$) and cobalt sulfate hexahydrate ($\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$) as precursor in the presence of sodium borohydride agent and cetyltrimethylammonium bromide (CTAB) surfactant. The samples were characterized by high resolution transmission electron microscopy (HRTEM), field effect scanning electron microscopy (FESEM), X-ray diffraction (XRD), vibration sampling magnetometer (VSM), electron dispersive spectroscopy (EDS) and Fourier transform infrared spectroscopy (FTIR) in different temperature. XRD pattern of FeCo samples showed the structure of body center cubic (bcc) structure. The particle size of as-prepared sample was around 28 nm and annealed sample was around 50 nm in diameter at 800 oC. The TEM studies show the rod-like shaped nanoparticles which changed to rod-shaped particles by increasing annealing temperature. The sharp peaks in FTIR spectrum determined the element of Fe-Co nanoparticles. EDS shows peaks of iron and cobalt with less impurity in prepared samples. The result of magnetic measurements showed a good .coercive field and saturation magnetism around 1158 G and 22 emu/g, respectively

کلمات کلیدی:

BCC Structure, sodium borohydrid, CTAB, chemical synthesis

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