نویسندگان:

Kameliya Ghaffarzadeh - *Department of Chemistry, Tehran North Branch, Islamic Azad University, Tehran, Iran.*

Pirouz Derakhshi - *Department of Chemistry, Tehran North Branch, Islamic Azad University, Tehran, Iran.*

Mohammad Yousefi - *Department of Chemistry, Yadegar-e-Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran.*

Ali Mahmoudi - *Department of Chemistry, Tehran North Branch, Islamic Azad University, Tehran, Iran.*

Parviz Aberoomand Azar - *Department of chemistry, Science and Research Branch, Islamic Azad University, Tehran, Iran.*

خلاصه مقاله:

In this research, first, nanoparticles of SrFe11.98Mg0.1Sn0.1O19 hexaferrite was synthesized via sol-gel auto-combustion process and then the nanocomposites of hexagonal ferrites/perovskite with the amounts of SrFe11.98Mg0.1Sn0.1O19/BaTiO3 (50/50, 40/60, 70/30 w/w) was prepared by the ball-milling method. Fourier transform infrared (FTIR) spectrums of SrFe11.98Mg0.1Sn0.1O19,was shown that the bands at about ۴۰۰ and ۵۰۰ cm-۱ proved the formation of nano hexagonal ferrites. On the FTIR spectrum of nanocomposites, the Ti-O bond of perovskite appeared. X-ray diffraction (XRD) analysis was confirmed the formation of hexaferrite and perovskite phase of BaTiO3. Field emission electron microscopy (FESEM) pictures have represented the formation of hexagonal nanoparticles and sphere shape of BaTiO3. Vibrating sample magnetometer (VSM) hysteresis loop was revealed that SrFe11.98Mg0.1Sn0.1O19 belonged to the soft magnetic materials due to the ۶۰۴.۴۵Oe coercivity. By formation of nanocomposites, the coercivity was increased up to ۱۵۰۰ Oe. Vector network analyzer (VNA) analysis was revealed the maximum absorption of -۱۶.۴ db at ۱۱.۵ GHz frequency for SrFe11.98Mg0.1Sn0.1O19/BaTiO3 (۶۰/۴۰) nanocomposite sample.

کلمات کلیدی:

Ball- milling, Coercivity, Hexaferrite, Perovskite, Vector network analyzer