ABSTRACT

Synthesis and Characterization of Y-type Hexaferrites ($Ba_2Co_2Fe_{12}O_{22}$) and RGO composites with 20, 30, 40, 50 wt% of RGO, via ultra-sonication technique reports in this work. Ferrites were fabricated through technique of hydrothermal method and sintered at 1000 °C for 6 h. The microstructural features and physical properties of nano composites were characterized by X-ray diffraction, Fourier transform infrared spectroscopy, scanning electron microscopy and dielectric analysis methods. Formation of Ferrites and Ferrites/RGO composites is confirm by XRD, While XRD patterns of the Ferrite/RGO composite samples the diffraction peaks of reduced graphene oxide were not detected in the composite sample as prepared which may be the effect of a more disorderly stacking and fairly uniform dispersion of the graphene sheets. In SEM Study shows that the graphene nano layer surfaces were efficiently decorated with nanoparticles of barium hexaferrite. FTIR determines the functional chemical bonding present in all the samples. The FTIR spectra of $Ba_2Co_2Fe_{12}O_{22}$, RGO, and $Ba_2Co_2Fe_{12}O_{22}$ and RGO nanocomposites confirm the functional chemical bonding present in all the samples. The dielectric constant, loss, complex modulus and complex impedance of the composite were studied in the 1MHz-3 GHz frequency range. Dielectric values of all composites $Ba_2Co_2Fe_{12}O_{22}$/RGO of are much greater than those of pure Ferrite. According to results great potential showed by $Ba_2Co_2Fe_{12}O_{22}$ / as an efficient candidate for a new kind of content microwave, absorbing materials.