Abstract

The compositions of magnesium ferrite having general formula Mg Smx Gdy Fe2−x−y O4 (where x = 0.012, 0.013, 0.014, 0.015 and y=0.001) were prepared by sol-gel method. The samples were characterized by XRD, EDAX, FTIR and SEM techniques. The nano size was confirmed by the XRD and SEM micro graphs. In the Hysteresis studies, it was found that the
saturation magnetization of Gd$^{3+}$, Sm$^{3+}$ substituted Mg ferrites was higher than the unsubstituted ferrite and these studies were useful to understand the electromagnetic properties of these nano materials. The electrical studies of the nano Sm-Gd doped nano Mg-ferrite it was seen that the dielectric constant ($E_r$), dielectric loss ($E'_r$) was obtained and the permittivity studies show the decrease in relative permittivity of the material.

**Reference**

- R.V Upadhayay., et.,al ,Gd-substituted ferrite ferrofluid:a possible candidate to enhance
Synthesis of Nano sized Sm-Gd doped Magnesium ferrite and their Permittivity and Hysteresis Studies

- R.G Kulkarni., H Joshi., Comparison of magnetic properties of MgFe2O4 prepared by wet-chemical and ceramic methods,

Index Terms

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Applied Sciences

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