Abstract

Magnetoelectric composites containing PbTiO3 ZnFeCoO4 phases have been prepared by
standard ceramic technique. The structure and morphology of the composites were examined by means of X-ray diffraction (XRD) and Scanning Electron Microscopy (SEM). The XRD result showed that the composites consist of spinel ZnFeCoO$_4$ phase and pervoskite PbTiO$_3$ phase annealing at temperature 750°C. The variation in dielectric constant with the temperature and low frequency it shows dispersion in certain frequency. The dielectric properties are strongly influenced by interface phenomenon (Maxwell Wagner) due to the local electrical inhomogeneity. The peak value of dielectric decreases with increase in temperature. Conductivity, Susceptibility and permeability have been found to vary with temperature and concentration of ferrite phase due to increase in crystalline size. The static value of magnetoelectric conversion factor (dE/dx) was measured as function of applied magnetic field. The coexistence of inductive and capacitive natures in the composites favours size reduction and designation simplification in many passive electronic devices such as integrated filters and microwave absorbers.

References


Index Terms

Computer Science Composite Materials

Keywords

Composites Dielectric Properties Magnetic Properties Magnetoelectric Effect Magnetostrictive