

Study of structural properties of multiferroic composites

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The magnetoelectric (ME) composites with composition (y) Ni_{0.48}Cu_{0.12}Zn_{0.40}Gd_{0.04}Fe_{1.96}O₄ + (1-y) Ba_{0.985}Sr_{0.015}Zr_{0.20}Ti_{0.80}O₃ [(y) NCZGF + (1-y) BSZT] (where y = 0.0, 0.1, 0.2, 0.3, 0.4, 0.5 and 1.0) were prepared by the conventional solid state reaction route. The coexistence of both phases was confirmed by the X-Ray diffraction analysis and the lattice parameters for all samples were calculated. Microstructural and surface morphology were studied by Field Emission Scanning Electron Microscopy. The dielectric properties such as dielectric constant and dielectric loss were measured as a function of frequency at room temperature. P-E hysteresis loops and M-H hysteresis loops confirm the ferroelectric and ferromagnetic nature of the composite samples. Variation of ME coefficient (α ME) with dc magnetic field was also measured for all composite samples.

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