Structural and Electromagnetic Properties of CoFe2O4-ZrO2 Nanocomosites

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Abstract : The nanocomposites of CoFe2O4-xZrO2 with different loadings of ZrO2 (x = 0.025, 0.05, 0.075, 0.1 and 1.5) were prepared using ball mill method. All the samples were prepared at 980°C/1h using microwave sintering method. The x-ray diffraction patterns show the existence of tetragonal/monoclinic phase of ZrO2 and cubic phase of CoFe2O4. The effects of ZrO2 on structural and microstructural properties of CoFe2O4 composite ceramics were investigated. It is observed that the density of the composite decreases and porosity increases with x. The magnetic properties such as saturation magnetization (Ms), and Coercive field were calculated at room temperature. The Ms is decreased with x while coercive field is increased with x. The dielectric parameters exhibit the relaxation behavior in high-frequency region and showing increasing trend with ZrO2 concentration, showing suitable

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1