Study of dielectric and ferroelectric properties of multiferroic BiCo xFe1-xO3 ceramic

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Abstract: Multiferroics have been known as materials exhibiting both ferroelectric and ferromagnetic properties in same phase, they have interesting physical properties as well as possibility of practical application in some new memories, spintronics and sensor devices. One of the interesting multiferroic material is BiFeO3 which is the only known material exhibiting good ferroelectromagnetism at room temperature, because it has a high curie temperature (TC830°C) and a high neel temperature (T N370°C). Structural, dielectric and ferroelectric properties of multiferroic BiCoxFe1-xO3 (x = 0.0, 0.05, 0.10, 0.15, 0.20, 0.25) ceramic were studied by solution combustion technique. The prepared samples were characterized by X-ray diffraction (XRD), Transmission electron microscopy (TEM) and Differential scanning calorimetry (DSC). Average particle size of 16-20 nm were formed for the 800°C calcined powder and there is an improvement in dielectric constant and dielectric loss with cobalt substitution.
Author Keywords: dielectric constant; dielectric loss; Multiferroic; solution combustion technique

Year: 2010
Source title: Integrated Ferroelectrics
Volume: 120
Issue: 1
Page : 122-130
Link: Scorpus Link
Document Type: Conference Paper
Source: Scopus
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