SEMINAR ANNOUNCEMENT

"Study of Structural, Magnetic and Optical Properties of $BiFeO_3$−$PbTiO_3$ Multiferroic Composites"

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Multiferroics are characterized as materials that show more than one primary ferroic such as ferromagnetism, ferroelectricity or ferroelasticity simultaneously, i.e. in the same phase. These materials have applications such as the novel data memory, spintronics devices, magnetic sensors etc. BiFeO3 received great attention among the known multiferroic materials, as a prime candidate for room temperature application due to high ferroelectric Curie (1043 K), high magnetic Neel temperatures (647 K) and high magnetoelectric coupling coefficient. In this work, lead titanate altered bismuth ferrite (BiFeO3)1−x (PbTiO3)x [x = 0, 0.1, 0.2, 0.3, 0.4 and 0.5] have been synthesized by solid-state reaction method. The formation of the materials was confirmed by X-rays diffraction which shows the presence of morphotropic phase boundary (MPB) in the composite. Study of M-H graph reveals antiferromagnetic nature of BiFeO3. Magnetic measurement of (BiFeO3)1−x (PbTiO3)x ceramics shows weak-induced ferromagnetism by substituent effects at a temperature of 5 K. Low-temperature magnetic estimation under ZFC exhibits an abnormality in tetragonal phase of MPB for composition x = 0.2 and 0.3. Direct and indirect band gaps are altered with a change of PbTiO3 in (BiFeO3)1−x (PbTiO3)x composites.