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Transport properties of doped multiferroic transition metal doped bismuth ferrite

Transition-metal perovskite oxides are studied theoretically and experimentally because of their various exotic properties, including ferroelectrics, ferromagnetism, superconductivity, multiferroic and colossal magnetoresistance effects. Now Multiferroics have found intensive interest among researcher due to its excellent relation between spin, phonon, charge ordering and FE ordering. The transitions of magnetic orders and complex competitions of various interactions and various physical phenomenon at low temperature make the materials more interesting for the study of electrical and magnetic response at different temperature. Transition metal doped multiferroic RMnO_3 with $R = \text{Gd}, \text{Tb}$ and Dy are synthesized using chemical and solid-state reaction method. These bulk samples are polycrystalline in nature having orthorhombic structure and Pbnm space group. The bulk sintered sample showed frequency independent dielectric anomaly at room temperature. The SEM micrograph indicates porous nature of the ceramics with fine and coarse grain connected with each other. All these bulk materials showed good ferroelectric behavior around room temperature with high dielectric constant value which is very important for microelectronic industry. Detail transport phenomena and applications will be discussed during presentation

Keywords: Multiferroics, Transition metal, Transport, Ferroelectric and Dielectric

Authors: SAHU, Dipti Ranjan (NUST); Dr ROUL, B. K (Institute of Materials Science)

Presenter: SAHU, Dipti Ranjan (NUST)

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