Materials Science (Medžiagotyra). Vol. 17, No. 2. 2011, pages 186-190

Frequency Dependent Electrical Properties of Ferroelectric Ba0.8Sr0.2TiO3 Thin Film

Abstract

The frequency dependent electrical parameters, such as impedance, electric modulus, dielectric constant and AC conductivity for ferroelectric $Ba_{0.8}Sr_{0.2}TiO_3$ thin film have been investigated within the range of 1 Hz and 10^6 Hz at room temperature. Z^* plane shows two regions corresponding to the bulk mechanism and the distribution of the grain boundaries-electrodes process. M'' versus frequency plot reveals a relaxation peak, which is not observed in the ε'' plot and it has been found that this peak is a non-Debye-type. The frequency dependent conductivity plot shows three regions of conduction processes, i. e., a low-frequency region due to DC conduction, a mid-frequency region due to translational hopping motions and a high-frequency region due to localized hopping and/or reorientational motion.

Keywords

BST thin film; Ferroelectric; Impedance; Dielectric properties; AC conductivity