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Preparation, structural and functional properties of PbTiO3-? ceramics

Khiat Abd elmadjid, Felicia Gheorghiu, Mokhtar Zerdali, Mohammed Kadri, Saad Hamzaoui

Abstract: In the present study, oxygen deficient PbTiO3-? ceramics were prepared by solid state-reaction method. The formation of the pure perovskite phase with tetragonal structure was confirmed for the 800 °C/2 h calcined sample by using X-ray diffraction analysis at room temperature. Energy dispersive X-ray spectroscopy analyses confirm the creation of oxygen vacancies in the system for charge compensations, as demonstrated by the percentage of O atoms of ?53%. The complex impedance data reveals important contributions of the oxygen vacancies to the total dielectric response that are homogeneous distributed within the sample. The room temperature magnetic properties show a weak ferromagnetic character in all the samples that might be attributed to the oxygen vacancies defects and to surface effects.

Keywords : Ceramics, oxygen vacancies, EDX spectra, Dielectric properties, Magnetic Properties