

# Preparation, structural and functional properties of $\text{PbTiO}_{3-x}$ ceramics

**Khiaat Abd elmadjid, Felicia Gheorghiu, Mokhtar Zerdali, Mohammed Kadri, Saad Hamzaoui**

**Abstract:** In the present study, oxygen deficient  $\text{PbTiO}_{3-x}$  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 75.3%. 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