

DIELECTRIC BEHAVIOR AND PTCR AFFECT IN NANO-CRYSTALLITE PT FERROELECTRIC CERAMICS

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ABSTRACT

The AC behavior of the nano-crystallite PT ceramic sample was studied in wide temperature and frequency ranges. The results show diffuse phase transition and a positive temperature coefficient of resistivity (PTCR) was observed in the temperature dependence of the ceramic resistivity. The results are explained based on the Heywang and Jonker models. The Schottky barrier formed at grain boundary regions act as traps of the electrons available from oxygen vacancies in the ceramics. This provides PTCR characteristics from the transition temperature to about 210°C. A separation of the grain and grain boundary properties has been achieved using equivalent circuit model in impedance analysis.

KEYWORDS: Nano-Crystallite PT Ceramic, AC Properties, Positive Temperature Coefficient of Resistivity (PTCR)