

Dielectric Relaxation in $\text{Ca}_5\text{Nb}_4\text{TiO}_{17}$ Ceramics

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The temperature dependence of dielectric properties and electrical conduction of $\text{Ca}_5\text{Nb}_4\text{TiO}_{17}$ ceramics were characterized in a broad temperature range. A dielectric anomaly with strong frequency dispersion was detected in the temperature range 700-1010 °C. This dielectric relaxation could be almost removed completely by annealed in an oxidizing atmosphere. Complex impedance analysis confirmed the electrical inhomogeneity of the ceramics with different contributions from the bulk and grain boundaries. This suggests that the main mechanism for the observed relaxation is the Maxwell-Wagner polarization. *ac* conductivity results revealed the variation of conduction mechanism with increasing temperatures from localized hopping to long-range motion of electrons.