PECULIARITIES IN DIELECTRIC AND MAGNETIC-RESONANCE CHARACTERISTICS OF NANOCRYSTALLINE POTASSIUM TANTALATE

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S u m m a r y

A broad peak independent of the measurement frequency has been detected in the temperature dependence of the dielectric constant of nanocrystalline potassium tantalate in the temperature interval 20 K $< T <$ 40 K. The observed maximum was supposed to be associated with a ferroelectric phase transition at the Curie temperature $T_c = 29 \pm 2$ K. The dielectric constant was determined to obey the Curie–Weiss law, and the corresponding Curie–Weiss constant was obtained to equal $C = (2.5 \pm 1) \times 10^3$ K. An unknown impurity, which locally destroys the cubic symmetry of the lattice and gives rise to the formation of polar microregions, was supposed to be responsible for the phase transition. Two types of EPR spectra were revealed. A probable application of the new material has been discussed.