

## Low-temperature phase transition in $K_{0.2}Na_{0.8}NbO_3$

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$NaNbO_3$  presents a series of phases, among them ferroelectric and antiferroelectric ones. Recently we discovered new low-temperature phases in  $NaNbO_3$  ceramics prepared by a new chemical route. The size of the grain and the strain have influence on the phase transition sequence of ceramic materials. For example, when particles are small enough, the polarization in a ferroelectric material becomes zero and a size - driven ferroelectric - paraelectric phase transition is observed. Another important factor influencing phase of ferroelectric ceramics is the impurity introduced in the crystal structure. For example, the introduction of 2 % of Li in the  $NaNbO_3$  structure is sufficient to change the temperature where  $NaNbO_3$  is ferroelectric from 163 K to room temperature. In this work we investigate through electric and Raman experiments the influence of 20 % of potassium in the structure of  $NaNbO_3$  on the sequence of low - temperature phase transition of sodium niobate ceramic prepared by a new chemical route. Analysis of band linewidths of the bands in the Raman spectra point to an orientational mechanism dominating the peak damping of  $NaNbO_3$  and  $K_{0.2}Na_{0.8}NbO_3$ , although a weak contribution of the anharmonic effect is also observed. This is opposed to what is observed at high temperature. The comparison of the temperature of the phase transitions for the two materials is also given.