

CRYSTALLINE STRUCTURE, DIELECTRIC AND PIEZOELECTRIC PROPERTIES OF BISMUTH-LAYER $\text{Ca}_x\text{Bi}_4\text{Ti}_{3+x}\text{O}_{12+3x}$, ($x=1,2$) COMPOUNDS

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Keywords: Bismuth titanates, crystalline structure, piezoelectricity

Bismuth titanates are of great technological interest because of their applications as non-volatile ferroelectric memories, and high-temperature piezoelectric materials. All of them belong to the Aurivillius bismuth layer-structure. Some compounds belonging to that family show high-conduction behaviour, which difficult the poling process. On the contrary, the Calcium Bismuth Titanates have shown very high resistivity values, which make suitable the poling process at relatively high temperatures, necessary for a correct polarization step.

Compounds of the following composition: $\text{Ca}_x\text{Bi}_4\text{Ti}_{3+x}\text{O}_{12+3x}$, ($x=1,2$), has been synthesized by solid-state reaction between the corresponding oxides and carbonates. Lattice parameters, Structure crystalline, and Space Group have been established by XRD techniques. Sintering of isopressed compacts has been studied by Dilatometer tests. High-density bodies have been obtained at relatively low temperature. Curie temperature, T_C , Room Temperature permittivity, conductivity as a function of temperature and piezoelectric parameters have been measured on sintered, well-densified samples. The results seem to indicate that these compound are very promising piezoelectric materials for high-temperature applications.