

**STRUCTURE AND DIELECTRIC PROPERTIES OF
Bi₄Pb_{1.5}Ti_{4.5}O_{16.5} AND Bi₅Ca_{0.5}GaTi_{3.5}O_{16.5}**

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New layered perovskite-like bismuth oxides were synthesized by solid-state reaction. These compounds are new members of the Aurivillius-type family with general formula Bi₂O₂[A_{n-1}B_nO_{3n+1}], where *n* is the number of perovskite layers. In this study we present the first example of a “mixed layer” Aurivillius phases with *n*=4.5.

The lattice parameters of the compounds were determined by x-ray powder diffraction.

Both compounds have orthorhombic structures (sp. gr. *Cmm2*, no. 35), with *a* = 5.4434(1) Å, *b* = 5.4506(1) Å, and *c* = 45.527(2) Å in Bi₄Pb_{1.5}Ti_{4.5}O_{16.5} and *a* = 5.3868(7) Å, *b* = 5.4185(8) Å, and *c* = 45.267(8) Å in Bi₅Ca_{0.5}GaTi_{3.5}O_{16.5}. Dielectric properties of Bi₄Pb_{1.5}Ti_{4.5}O_{16.5} and Bi₅Ca_{0.5}GaTi_{3.5}O_{16.5} were studied over the temperature range 300-1200 K at frequencies varied from 1 to 50 kHz. Both compounds have the ferroelectric properties and temperatures of the ferroelectric-paraelectric phase transitions (Curie temperatures) were found to be 805 and 844 K, respectively.

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