

# Electrical impedance and modulus studies of ferroelectric ceramic $\text{CaBi}_4\text{Ti}_4\text{O}_{15}$ added with $\text{Bi}_2\text{O}_3$

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Great attention has been given to the bismuth layer-structured ferroelectrics (BLSFs) in recent times. The BLSFs have applications to nonvolatile memories with high durability, optoelectronic devices, lead-free piezoelectric, pyroelectric sensors, etc. The  $\text{CaBi}_4\text{Ti}_4\text{O}_{15}$  (CBT) is bismuth layer-structured ferroelectrics that belong to the Aurivillius family [1, 2]. This ceramic material is composed of a pseudo-perovskite of blocks interleaved with bismuth oxide, presenting a deficiency in the cation. In this work, the samples were prepared by the solid-state reaction method and Bismuth oxide ( $\text{Bi}_2\text{O}_3$ ), in proportions of 0, 5 and 10 wt% were added to the CBT phase. The x-ray diffraction patterns showed the formation of the single orthorhombic phase of  $\text{CaBi}_4\text{Ti}_4\text{O}_{15}$ . The output data extracted from Rietveld refinement were used to calculate the crystallite size. The dielectric behavior was studied from the values of complex impedance and complex modulus as function of frequency (1 Hz - 1 MHz) and temperature (573 K - 733 K).

**Acknowledgement:** The authors thank the LOCEM (Physics Department, Federal University of Ceará, Brazil), the Brazilian Agency Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Fundação de Amparo a Pesquisa do Estado de Mato Grosso (FAPEMAT), Fundação Cearense de Pesquisa e Cultura (FUNCAP), the U. S. Air Force Office of Scientific Research (AFOSR) (FA9550-11-1-0095) for the Financial Support.

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