

Defect mechanism and electrical properties of BiFeO₃ based ceramics

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Bismuth ferrite (BiFeO₃) is ABO₃ system with multiferroic. A/B-site modification in bismuth ferrite is expected to exhibit interesting ferroelectric and conduction properties. In this work, aliovalent cations modifications were carried out in order to improve the structural, dielectric and high-temperature conduction performance of the materials. The polarization response and dielectric properties were improved by the addition of small amount of A/B-site cations (Ba²⁺/Ti⁴⁺) and optimal amount of Bi₂O₃ in BFO ceramics. To better understand the effects of defects, the equilibrium electrical conductivity was investigated under various oxygen partial pressures (pO_2) at high temperatures.