

Microstructure and dielectric properties of nickel-doped Ba_{0.7}Sr_{0.3}TiO₃ ceramics fabricated by solgel method

ABSTRACT

A study of phase transition, microstructure, and dielectric properties of Ba_{0.7}Sr_{0.3}Ti_{1-6x}Ni_xO₃ (BSTN) ceramics prepared by slow-injection solgel technique with x ranging from 0 to 1 mol% is reported in this article. The as-prepared BSTN material was calcined at 800 and 1000°C and subsequently sintered at 1100 and 1200°C, respectively. The optimized condition was found to be Ba_{0.7}Sr_{0.3}TiO₃ doped with 1 mol% nickel calcined at 1000°C and sintered at 1200°C having the lowest dielectric loss of 0.02 with a dielectric constant of 1603 which was measured at a frequency of 1 kHz at room temperature.

Keyword: Dielectric properties; Microstructure; Nickel