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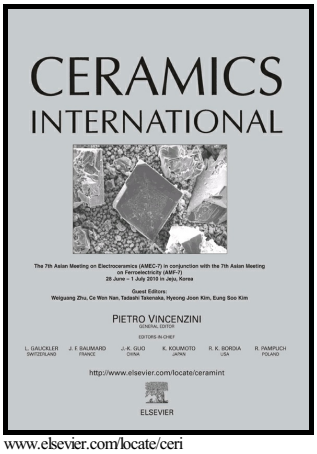

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Abstract

The Solid solutions of (1-x) $Ba_{0.8}Sr_{0.2}TiO_3$-x $Ba(Zn_{1/3}Nb_{2/3})O_3$ (BST-BZN) with $0.025 \leq x \leq 0.15$ were prepared by a high temperature solid-state reaction technique. The effects of the $Ba(Zn_{1/3}Nb_{2/3})O_3$ addition on the phase composition in the B site on structural and dielectric properties was investigated. The room temperature X-ray diffraction analyses of all ceramics revealed a perovskite phase with a composition dependent symmetry. The temperature and frequency dependence of the dielectric permittivity and losses have been explored. While ceramics of compositions $x \leq 0.05$ showed normal ferroelectric behavior, while ceramics with $x \geq 0.1$ were of relaxor type. It was found that degree of diffuseness and the relaxor effect increased, whereas the transition temperature (T_C or T_m) decreased when both zinc and niobium were introduced in the $Ba_{0.8}Sr_{0.2}TiO_3$ lattice. For the composition with $x \geq 0.1$, the frequency depend on T_m, satisfying the Vogel-Fulcher formula, which indicates a relaxor bahavior.

Keywords: Perovskite structure; Phase transition; Relaxor behavior.