

Synthesis and Properties of Nd and Ge Codoped Bismuth Titanate Thin Films by Chemical Solution Deposition

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Abstract

Recently, Nd doped bismuth titanate (BNT) thin films have been receiving great attention for their excellent ferroelectric properties. However, the processing temperature of BNT thin films with large ferroelectricity is still high above 700°C. In this study, Ge substitution for the Ti site in BNT was studied for the improvement of microstructural and ferroelectric properties of low-temperature-processed thin films. Ge-doped BNT (BNTG) thin films crystallized into the $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ phase above 600°C. The surface morphology of the BNTG thin films was greatly improved by optimizing the amount of Ge substitution compared with that of nonsubstituted BNT films. In addition, the BNTG thin films were found to show excellent ferroelectric properties after crystallization even at 600°C.