

The effect of sintering temperature on crystal structure and microstructure of Pr_{0.67}Ba_{0.33}MnO₃ ceramic.

Abstract

Polycrystalline perovskite manganites of Pr_{0.67}Ba_{0.33}MnO₃ bulk ceramic samples were prepared via conventional solid-state reaction. The influence of structure and microstructure towards sintering temperature of the samples were studied. At lower sintering temperature (900°C, 1100°C and 1100°C) other phases such as PrO₂ and BaMnO₃ were detected using XRD and further confirmed with EDX analysis. Furthermore, phase purification and crystal structure transformation was observed in sample sintered at 1200°C and 1300°C respectively. SEM analysis indicated that higher sintering temperature promotes grain growth and densification. Overall, in this paper, phase purification and crystal structure transformation had been observed. Orthorhombic structure is more favorable to form at higher sintering temperature for Pr_{0.67}Ba_{0.33}MnO₃.

Keyword: Sintering temperature; Crystal structure transformation; Phase purification.