

Influence of sintering temperature on microstructure and electrical properties of La_{0.67}Ba_{0.33}MnO₃ ceramic

ABSTRACT

In this study we report the effect of the sintering temperature of polycrystalline La_{0.67}Ba_{0.33}MnO₃ (LBMO) manganites synthesized via solid state reaction method. LBMO have been sintered at 900 to 1200 °C in intervals of 100 °C. X-ray diffraction spectrum confirms that LBMO phase formation starts at 900 °C accompany by a minor second phase of BaMnO₃ and fully forms into single phase of LBMO at 1200 °C. SEM images showed that, the grain size increased with sintering temperature and leading to densifications or lower porosity. The T_p was not affected by the sintering temperature. However, the electrical resistances of samples were decreased with the sintering temperature. At higher sintering temperature, due to grain growth and reduction of insulating BaMnO₃ phase, the intergrain connectivity has been improved and the resistance drops.

Keyword: Ceramic; Electronic properties; Microstructure