

Structural, microstructural and electrical properties of $\text{La}_{0.67}(\text{Ba,Sr})_{0.33}\text{MnO}_3$ system

ABSTRACT

$\text{La}_{0.67}(\text{Ba,Sr})_{0.33}\text{MnO}_3$ were prepared via solid-state reaction method. Rietveld refinement showed that when $\text{Ba}^{2+}(1.49\text{\AA})$ is replaced with smaller ion, $\text{Sr}^{2+}(1.32\text{\AA})$, its lattice parameter, volume, bond distance and angle decreases, and also different microstructure was obtained. Transition temperature, T_p shifted to higher temperature while the resistance and magnetoresistance (MR) behaviour of samples were quite similar. This phenomenon believed to be due to the variation of spin-dependent scattering and/or spin-polarization tunneling across the grain surface/boundary. Typical polycrystalline (intrinsic and extrinsic MR) type of MR is shown for both samples. The highest % of low-field magnetoresistance (LFMR) (at 0.1T) of -11.5% and -10.2% at 80 K was given by $\text{La}_{0.67}\text{Ba}_{0.33}\text{MnO}_3$ (LBMO) and $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ (LSMO) samples respectively.

Keyword: LEMR; Transition temperature