

## Effect of Pr substitution on magnetoresistance in La<sub>23</sub>/Ba<sub>13</sub>/MnO<sub>3</sub> perovskite

### ABSTRACT

Polycrystalline of  $(\text{La}_{1-x}\text{Pr}_x)_0.67\text{Ba}_{0.33}\text{MnO}_3$  with  $x = 0, 0.167, 0.33, 0.5, 0.67, 0.833, 1$  have been prepared using solid state reaction. The effect of substituting praseodymium at La-site on magnetoresistance (MR) effect has been investigated. The electrical property, was determined by using standard four-point probe resistivity measurement in a temperature range of 30 K to 300 K. Metal-insulator transition temperature ( $T_p$ ) shifted to lower temperatures with the increases of Pr doping with the value of >300, 270, 250, 226, 202, 186 and 158 K for  $x = 0, 0.167, 0.33, 0.5, 0.67, 0.833, 1$ , respectively. Overall, MR drops slowly when temperature rises. All doping concentration give small variation range (5% to 25%) except for  $x=1.0$ , where this sample show significantly higher MR value at all temperature as compared to other samples. The highest MR value of 38% is observed at 270K. In the semiconducting portion, activation energy ( $E_a$ ) has been investigated. The  $E_a$  increases as the doping concentration increases.

**Keyword:** Pr; La;  $T_p$ ; Magnetoresistance; Substitution; Polycrystalline