

## Colossal Magnetoresistance of $(\text{La}_{1-x}\text{Dy}_x)_0.67\text{Sr}_{0.33}\text{MnO}_3$ Perovskite

### ABSTRACT

In this work, colossal magnetoresistance (CMR) of  $(\text{La}_{1-x}\text{Dy}_x)_0.67\text{Sr}_{0.33}\text{MnO}_3$  ceramic, with  $x=0.00$ ,  $0.20$  and  $0.40$  were prepared using the solid-state reaction technique. The structures, surface profile, magnetic and electrical properties of the samples exhibit single phase rhombohedral distorted perovskite structures, which were caused by the Jahn-Teller distortion. Atomic Force Microscopy (AFM) analysis showed no significant change of grain size when Dy was substituted in La site. Magnetization analysis showed that  $T_c$  drop as the substitution concentration increased. The highest CMR value of  $24.3\%$  and  $16.6\%$  at  $100\text{K}$  and  $300\text{K}$  was observed in sample with  $x = 0.4$  at  $1$  Tesla. Low field magnetoresistance effect had been observed for  $x = 0.00$  and  $x= 0.20$  sample. However, at high substitution concentration ( $x=0.40$ ) LFMR effect tend to vanish.

**Keyword:** colossal magnetoresistance (CMR), perovskite