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**BOOK
OF
ABSTRACTS**

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Mössbauer studies of iron doped $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$

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The iron-doped perovskite $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$ compound has been studied by x-ray diffraction, Mössbauer spectroscopy, and vibrating sample magnetometry. The single phase of the polycrystalline $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$ powder have been prepared by a water-based sol-gel method. Crystalline $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$ was a rhombohedral structure with lattice parameters $a_0 = 5.480 \text{ \AA}$, $\alpha = 60.259^\circ$. Mössbauer spectra of $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$ have been taken at various temperatures ranging from 20 to 400 K. Analysis of ^{57}Fe Mössbauer spectrum has considered anisotropic hyperfine field fluctuation. Temperature dependence of anisotropy energy is calculated from the relaxation rate. The saturation magnetization of $\text{La}_{0.67}\text{Sr}_{0.33}\text{Mn}_{0.99}^{57}\text{Fe}_{0.01}\text{O}_3$ is found to be 60.15 emu/g at room temperature. The Curie temperature, T_C , is determined to be 375 K. The temperature dependence of the resistance under zero and 10 kOe applied field shows that a semiconductor-metal transition, $T_{\text{SC-M}}$, occurs at 252 K. The relative magnetoresistance, MR, is about 36.2 %.