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# Role of intermediate layer for $La_{2/3}Sr_{1/3}MnO_3/SiO_2/Si(1\,0\,0)$ granular thin films

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**Abstract**

Magnetotransport properties of $La_{2/3}Sr_{1/3}MnO_3$ (LSMO) (1500 Å)/YSZ (100–1500 Å)/$SiO_2$/Si (1 0 0) bilayers were investigated by low-field magnetotransport measurement at room temperature. It is observed that MR ratio of the films with a YSZ buffer layer (MR = 0.43%) was much higher than those of the films without a buffer layer (MR = 0.21%). The better results of the LSMO films with a YSZ diffusion barrier are deduced to be related to the improvement of microstructure of the films and the reduction of the interface reaction between the films and $SiO_2$/Si (1 0 0) substrates. 

*Keywords:* Low-field tunnel-type MR; Sol–gel deposition; Buffer layer; Dead layer