

MAGNETIC AND TRANSPORT PROPERTIES OF $\text{LaMnO}_3/\text{La}_{0.67}\text{Ba}_{0.33}\text{MnO}_3$ SINGLE AND BI-LAYER THIN FILMS

K. P. Lim¹, J. K. Wong¹, S. A. Halim¹, S. K. Chen¹, S. W. Ng¹ and H. S. Woon²

¹*Department of Physics, Faculty of Science, Universiti Putra Malaysia,
43400 UPM Serdang, Selangor, Malaysia.*

²*College of Engineering, Universiti Tenaga Nasional, Jalan IKRAM-UNITEN,
43000 Kajang, Selangor, Malaysia.*

Corresponding author: kplim@science.upm.edu.my

ABSTRACT

Single and bi-layer thin films of LaMnO_3 and $\text{La}_{0.67}\text{Ba}_{0.33}\text{MnO}_3$ were deposited on amorphous fused silica substrate via pulsed laser deposition technique (PLD). In this work, the effect of stacking sequence in bi-layer manganite films of LaMnO_3 and $\text{La}_{0.67}\text{Ba}_{0.33}\text{MnO}_3$ was reported. The crystal structure formation, magnetic, resistivity and magnetotransport properties of bi-layer manganite films were studied. The unit cell of LMO undergo negative misfit when growth on LBMO while positive misfit for unit cell of LBMO when growth on LMO. Such changes indirectly alter the magnetism of the system since it governed by the Mn-O-Mn bond angle and Mn-O bond length. Therefore, different magnetic pinning strength was observed between the LMO and LBMO layer coupled in LMO/LBMO and LBMO/LMO respectively. The stronger the magnetic spins pinning effect, the higher the resistivity is and the more scattered the %MR are.

Keywords: colossal magnetoresistance; thin film; manganite; crystal structure; magnetism

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