

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Nonlinear current-voltage characteristics of oxygen-deficient $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_{3-y}$ films¹ SHIU-JEN LIU, Department of Materials Engineering, Mingchi University of Technology, J.Y. JUANG, Department of Electrophysics, National Chiao Tung University, J.-Y. LIN, Institute of Physics, National Chiao Tung University, K.H. WU, T.M. UEN, Department of Electrophysics, National Chiao Tung University, Y.S. GOU, Department of Physics, National Taiwan Normal University — Two different types of nonlinear current-voltage characteristics are observed in oxygen-deficient $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_{3-y}$ (LCMO) films at temperatures below insulator-metal transition. The parabolic-like dynamic conductance $G(V)$, defined as dI/dV , curves near zero bias observed in highly oxygen-deficient LCMO films implies the contribution from the spin-dependent tunneling transport between ferromagnetic clusters with magnetic-disordered regions serving as tunneling barriers. On the other hand, for the slightly oxygen-deficient LCMO films, dips around zero bias were observed in nonlinear $G(V)$ curves and have been attributed to spin-flip scattering with oxygen vacancies serving as scattering centers.

¹Supported by the National Science Council of Taiwan, under Grant No. NSC 95-2112-M-131-002-MY3

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Date submitted: 19 Dec 2007

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