

Abstract Submitted  
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**Nonlinear current-voltage characteristics of oxygen-deficient  $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_{3-y}$  films**<sup>1</sup> 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.

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