

Abstract Submitted  
for the MAR09 Meeting of  
The American Physical Society

**Tunable Metallicity at the Surface of  $\text{La}_{5/8}\text{Ca}_{3/8}\text{MnO}_3$  Thin Films<sup>1</sup>**

KENJI FUCHIGAMI, Oak Ridge National Laboratory / The Univ. Tennessee, ZHENG GAI, Oak Ridge National Laboratory, THOMAS Z. WARD, Oak Ridge National Laboratory / The Univ. Tennessee, LIFENG YIN, PAUL SNIJDERS, Oak Ridge National Laboratory, WARD PLUMMER, The Univ. Tennessee / Louisiana State University, JIAN SHEN, Oak Ridge National Laboratory / The Univ. Tennessee — A series of in-situ STM studies of  $\text{La}_{5/8}\text{Ca}_{3/8}\text{MnO}_3(001)$  thin film reveals that the surface metallicity can be tuned by extrinsic oxygen doping at the surface. By in-situ annealing with or without oxygen, we can convert the surface back and forth between a  $(\sqrt{2} \times \sqrt{2})R45$  reconstructed surface and a  $(1 \times 1)$  surface. Electrical properties of the surfaces are investigated by scanning tunneling spectroscopy (STS). I-V curves clearly show that the oxygen doping renders the surface insulating while the  $(1 \times 1)$  surface without the oxygen doping is metallic. Structural models and their correlation to the surface metallicity have been proposed.

<sup>1</sup>Supported in part by the Division of Materials Science and Engineering, U. S. DOE. KF and EWP have also received support from NSF and DOE (DMS&E) (NSF-DMR-0451163).

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Date submitted: 23 Nov 2008

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