

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Simple Molecules Adsorption Studies on Highly Epitaxial -Pure Phase- Delafossite CuFeO_2 Thin Films ALEJANDRO CABRERA¹, PIERO FERRARI, Instituto de Fisica, Pontificia Universidad Catolica, Santiago, Chile, TOYANATH JOSHI, PAVEL BORISOV, DAVID LEDERMAN², Department of Physics and Astronomy, West Virginia University, Morgantown, WV 26506-6315, USA — Carbon dioxide (CO_2) and hydrogen (H_2) adsorption studies on CuFeO_2 thin films grown on Al_2O_3 (00.1) substrates were performed in ultrahigh vacuum using thermal programmed desorption (TPD). Growth of pure phase Delafossite CuFeO_2 thin films on Al_2O_3 (00.1) substrates by pulsed laser deposition was systematically investigated as a function of growth temperature and oxygen pressure. CO_2 and H_2 TPD were performed on CuFeO_2 -grown at 600°C and in 0.1mTorr pressure- indicating chemisorption of both gases on the oxide surface. TPD with a temperature ramp of 50 K/s showed a CO_2 peak at 573 K and H_2 peak at 823 K. The chemisorption of CO_2 and H_2 on the CuFeO_2 surface is relevant to the potential use of this material in photocatalytic applications for H_2 production and/or CO_2 conversion.

¹Fund from FONDECYT 1130372

²Research Challenge Grant from the West Virginia Higher Education Policy Commission (HEPC.dsr.12.29) and the Microelectronics Advanced Research Corporation (Contract # 2013-MA-2382) at WVU.

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Date submitted: 15 Nov 2013

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