Abstract Submitted
for the TSF09 Meeting of
The American Physical Society

Geometric Structure and Desorption Kinetics of CO on Cr_2O_3(0001)/Cr(110) GABRIEL ARELLANO, SY REDDING, JENNIFER WALTERS, NICHOLAS CLARK, SIMONA RIEMAN, HEIKE GEISLER, CARL VENTRICE, Dept. of Physics, Texas State University — The Cr(110) surface is unique in that its native oxide grows epitaxially. Since understanding the adsorption and desorption kinetics of simple molecules on transition metal oxides is important for understanding catalytic phenomena, we have studied the adsorption geometry and desorption kinetics of CO on the epitaxial Cr_2O_3(0001) surface. The adsorption of CO was performed at 120 K and produced a weak ($\sqrt{3}$ x $\sqrt{3}$) R 30° reconstruction, as monitored by low energy electron diffraction (LEED). To determine the activation energy and desorption kinetics, temperature programmed desorption (TPD) measurements have been performed at heating rates of 5, 10, 25, and 50 °C/min. The results of the TPD measurements indicate that the desorption is approximately 1^{st} order and has an activation energy of 0.52 eV/molecule (50 kJ/mol).

Carl Ventrice
Texas State University

Date submitted: 28 Sep 2009 Electronic form version 1.4