Geophysical Research Abstracts, Vol. 9, 09095, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-09095


# An ambient pressure photoelectron spectroscopy study of the reaction of ozone with an alkali halide surface and the impact of water

J. C. Hemminger (1), M. A. Brown (1), M. J. Krisch (1), B.S. Mun (2),

(1) Department of Chemistry and AirUCI, University of California, Irvine, CA, 92697 USA. (2) Lawrence Berkeley National Laboratory, Mail Stop 6R2100, One Cyclotron Road, Berkeley, CA 94720 USA. (jchemmin@uci.edu / FAX: 949-824-2261 / Phone: 949-824-6022)

We have used ambient pressure photoelectron spectroscopy to study the reaction of ozone with a potassium iodide surface. Experiments were carried out as a function of relative humidity. Reaction of ozone with the surface of a KI single crystal results in the oxidation of the iodide to form iodate. Under dry conditions the reaction forms a surface passivating film of iodate. At relative humidities above 35% the reaction continues without surface passivation. This relative humidity also corresponds to the onset of surface ionic mobility as determined by separate atomic force microscopy experiments. Experiments have also been carried out on pressed pellet samples that have high surface defect densities. High surface defect densities lead to enhanced reactivity even under conditions of low relative humidity. On-going AFM experimental studies of the initiation sites of the reaction will also be described.