

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Observation of a $(\sqrt{3}\times\sqrt{3})R30^\circ$ Reconstruction on O-Polar ZnO Surfaces SETH KING, University of Wisconsin- Milwaukee, SOMENDRA PARIHAR, KALLOL PRADHAN, University of Wisconsin - Milwaukee, H. TREVOR JOHNSON-STEIGELMAN, State University of New York at Brockport, PAUL LYMAN, University of Wisconsin - Milwaukee — Low energy electron diffraction revealed a previously unreported $(\sqrt{3}\times\sqrt{3})R30^\circ$ reconstruction on clean, O-polar ZnO surfaces after *in-situ* preparation under conditions with an extremely low H background or after *ex-situ* tube-furnace annealing [1]. It has been proposed that unreconstructed, H-free, O-polar ZnO surfaces cannot be produced [2]. As the sample is prepared from the as-received surface, to a clean (1x1), and finally to the clean $(\sqrt{3}\times\sqrt{3})R30^\circ$ reconstruction, x-ray photoelectron spectroscopy shows decreasing intensity of the hydroxyl shoulder (located to the high-binding-energy side of the O1s peak). This reconstruction is stable against H₂, N₂, and air, although its formation is suppressed when preparation occurs under an intentional H₂ background. A structural investigation of the reconstruction with LEED-IV is under way. **References:** [1] S.T. King *et al.*, Surf. Sci. **604**, L131 (2008) [2] C. Wöll, Prog. Surf. Sci. **82**, 55 (2007)

Seth King
University of Wisconsin- Milwaukee

Date submitted: 21 Nov 2008

Electronic form version 1.4