Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Scanning tunneling spectroscopy on ZnO(0001) surfaces : evidence for an inhomogeneous electronic structure B. HACKENS, M.S. RODRIGUES, S. FANIEL, P.O. MOUTHUY, S. MELINTE, CERMIN, Universite catholique de Louvain, Louvain-la-Neuve 1348, Belgium, J. DUMONT, R. SPORKEN, Centre PMR, Facultes Universitaires Notre Dame de la Paix, Namur, Belgium — We performed low temperature (77 K) scanning tunneling microscopy (STM) and spectroscopy (STS) on the polar Zn-terminated ZnO(0001) surface [1]. STM and STS data show that the surface electronic structure strongly depends on the local morphology : we observe a narrow bandgap and surface states in the flat regions, and, in the defective surface regions, a wide bandgap without surface states. We also image atomically-resolved $(\sqrt{3} \times \sqrt{3})R30^\circ$ reconstructions in small defect-free areas.

[1] J. Dumont et al., Appl. Phys. Lett. 95, 132102 (2009).

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Date submitted: 21 Dec 2009 Electronic form version 1.4