

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Field-Induced Reversible Phase Manipulation in Metal-Insulator Transition using Scanning Tunneling Microscopy SE JUN PARK, CHANG-SUB BYUN, DO-HYANG PARK, IN-WHAN LYO, Institute of Physics and Applied Physics, Yonsei University 120-749, Seoul, Rep. of Korea — Reversible electronic switching between insulating and metallic phases is a novel idea that may allow new types of field effect devices feasible.¹ Here we demonstrate the reversible manipulation between metallic and insulating phases in two-dimensional In nanowire arrays on Si(111) surface near the metal-insulator transition temperature (T_c). The electronic switching of phases was induced by local electric field applied by the probe tip of a scanning tunneling microscope. The field-dependent hysteresis behavior was also observed in tip height measurements as a function of the sample bias, under the constraint of constant tunneling current. A model including the intrinsic bi-stability of the nanometer-scale domains of In nanowire arrays will be discussed. ¹C. Ahn, J. Triscone, J. Mannhart, *Nature* 6952, 1015 (2003)

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Date submitted: 01 Dec 2004

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