Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electronic and Transport Characteristics of Two-Phase Coaxial Gallium Nitride Nanowires V.M. AYRES, B.W. JACOBS, M.A. CRIMP, Michigan State University, East Lansing, MI 48824, R.E. STALLCUP, A. HARTMAN, Zyvex Corporation, Richardson, TX, 75081, M.A. TUPTA, Keithley Instruments, Cleveland, OH 44139, J.B. HALPERN, M.Q. HE, Howard University, Washington, DC 20059 — We will present results of investigations of electronic and transport characteristics of two-phase coaxial gallium nitride nanowires. The$\sim$50-100 nm gallium nitride nanowires grown in a direct reaction of metal gallium vapor with flowing ammonia at 850-900 $^\circ$C without a catalyst have a two phase coaxial zinc-blende/wurtzite structure, shown by high resolution TEM and nanodiffraction experiments. The electronic characteristics were investigated by STM. The transport characteristics were investigated in 2-point and 4-point probe configurations using a Keithley-Zyvex KZ100 Nanoprobing System, in which specially sharpened $\sim$30 nm radius tungsten nanoprobes were coupled to an ultra low noise semiconductor characterization system. The transport experiments were performed under direct SEM observation. Results indicating coaxial transport with different transport characteristics will be presented.

Virginia Ayres

Date submitted: 30 Nov 2005 Electronic form version 1.4