Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Intensity dependent photoluminescence studies on zinc oxide nanowires MARIAN TZOLOV, ANDREW EPPS, ERIC DRISCOLL, ZACHARY BARCIKOWSKI, Lock Haven University — The ZnO nanowires were grown by the chemical vapor transport method using a thin gold film as a catalyst. Their light emission in the visible and near UV spectral range was studied using excitation sources with large variation of the pump intensity, e.g. Xenon lamp, UV LEDs, nitrogen laser. The photoluminescence spectrum consists typically of the exciton emission band and a defect related band in the green spectral range. We have observed drastic change in the photoluminescence spectrum at high pump intensities with drastically decreased intensity of the defect related band. The results have been interpreted within a model accounting for the surface effects and associated band banding at the surface. Cathodoluminescence measurements of ZnO nanowires and bulk films were performed, which support the proposed model.

Andrew Epps
Lock Haven University

Date submitted: 10 Nov 2011 Electronic form version 1.4