Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Growth of Zinc Oxide Nanobelts JAMIE NOWALK, Lock Haven University — Zinc Oxide is a unique material that has a variety of applications in optoelectronics due to its piezoelectric, optical, and semiconducting properties. The carbothermal reduction of zinc oxide is a common technique used in chemical vapor deposition of nanostructures via the vapor transport mechanism. In this research project, the supply of zinc atom was successfully decoupled from the delivery of the oxidant, molecular oxygen. We have grown various forms of ZnO nanostructures at varying temperatures in a three-zone furnace. The reactions took place at a constant pressure of 200 torr on silicon substrates, each coated with a thin film of gold catalyst. Two-dimensional nano-ribbons were observed to grow best at higher temperatures between 800-1000 C, with the thinnest belts (30 nm) at 800 C. At 1000 C, the belts appear to taper off, resulting in shorter structures. One-dimensional wire growth was predominantly observed at 600 C. We compare our results with previously published syntheses of ZnO nanobelts.

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Date submitted: 08 Nov 2012 Electronic form version 1.4