Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Controlled Growth of Zinc Oxide Nanostructures for Applications[1] ABHISHEK PRASAD, ARCHANA PANDEY, YOKE KHIN YAP, Michigan Technological University — Zinc Oxide (ZnO) has proven to be a versatile functional material with promising properties. Here we discuss about the controlled growth and applications of various ZnO nanostructures including novel ZnO nanotubes (NTs) and nanosquids (NSqs). We use a conventional thermal CVD technique for the synthesis of ZnO nanostructures. We found that ZnO nanowires, nanobelts and nanocombs can be readily obtained by applying appropriate gas flow rates and growth temperatures.[2] ZnO NTs and NSqs can be formed on the substrates when appropriate cooling rate was applied.[3] These nanostructures were characterized using XRD, HRTEM, FESEM, Raman spectroscopy, and photoluminescence. Results show that ZnO nanostructures were single crystals in wurtzite structure. Among these ZnO NWs were found to be excellent electron field emitters and field effect transistors.

[1]Y. K. Yap acknowledges support from the DARPA (DAAD17-03-C-0115, through Army Research Laboratory).
[2]S. L. Mensah et al, J. Phys. Chem. C (Letter) 111, 16092 (2007).
[3]S. L. Mensah et al, Appl. Phys. Letts. 90, 113108 (2007).

Abhishek Prasad
Michigan Technological University

Date submitted: 25 Nov 2008 Electronic form version 1.4