

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**ZnO Nanowires: Building Blocks for Nanoscale Electronics, Optoelectronics and Chemical Sensors** ZHIYONG FAN, PAI-CHUN CHANG, DAWEI WANG, JIA G. LU, University of California, Irvine — Chemical vapor deposition synthesized single crystalline ZnO nanowires are configured as n-channel field effect transistors and their electrical transport properties are studied. It is observed that electron concentration and mobility in nanowires can be modified by varying the synthesis conditions. Photoluminescence and photoconductivity of individual nanowires are investigated. These nanowire field effect transistors demonstrate a broadband and polarization dependent photo-response. Due to the small diameter and tunable electron concentration, ZnO nanowire transistors are implemented as highly sensitive, gate refreshable chemical sensors with potential selectivity. These results open up the future applications of ZnO nanowires as one of the promising materials for nanoscale electronics, optoelectronics and chemical sensing devices.

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Date submitted: 30 Nov 2004

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