

Abstract Submitted
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Growth and Characterization of Wide Band Gap Semiconductors (Zinc Oxide, Zinc Sulfide)¹ JEFFREY SCHWARTZ, University of Texas at Dallas, JOSE PEREZ, YUDONG MO, University of North Texas — Zinc Oxide and Zinc Sulfide nanostructures were grown on a variety of substrates using aqueous growth solutions. The chemical composition of the nanostructures was characterized using micro-Raman spectroscopy, energy-dispersive X-Ray spectroscopy, and X-Ray diffraction. A Scanning Electron Microscope reveals a well-aligned, uniform, layer of hexagonally shaped Zinc Oxide nanorods growing up perpendicular to the substrate surface while the Zinc Sulfide formed irregularly shaped spheres on the substrate. Depending on the growth conditions, the diameters of the ZnO nanorods ranged from a few hundred nanometers to about 1 μm . The field emission properties of the ZnO nanorods and the ZnS spheroids were studied, with turn-on voltages found to be around 36 v / μm , as well as the effects on ZnS after exposure to various gases which was found to increase the turn-on voltage in most cases.

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