

Abstract Submitted
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Compositional dependence of the narrow band emission from zinc oxide nanowires¹ BRADLEY GOLDER, ERIC DRISCOLL, MARIAN TZOLOV, Lock Haven University of PA — Zinc oxide is a versatile platform thanks to the unique combination of optical, semiconducting, and piezoelectric properties of ZnO. The properties can be further diversified by creating microstructures and by varying the Zn/O ratio in the crystallites. We are illustrating this concept for the case of narrow band emission for ZnO nanostructures grown through chemical vapor transport. The samples were characterized by photoluminescence spectroscopy (pulsed and continuous wave), scanning electron microscopy, and energy dispersive x-ray spectroscopy. Narrow band emission has been observed in the pulsed excitation mode. The narrowing is intensity dependent suggesting a mechanism of stimulated emission. The emission properties were correlated with the degree of oxidation of the ZnO nanocrystallites and with the presence of optically active defects. The influence of different oxidizing agents on the emission properties of the ZnO nanocrystals will be shown.

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