

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Micro- and Nanostructural Properties of Wide Bandgap Semiconductors** NABIL DAWAHRE, GANG SHEN, SHAWN DAVID WILBERT, NICK HARRIS, WILLIAM BAUGHMAN, LEE BUTLER, JOSEPH BREWER, SEONGSIN MARGARET KIM, PATRICK KUNG, The University of Alabama — Wide bandgap semiconductor materials based on ZnO and GaN have attracted considerable attention in recent years because of the practical applications such as green and blue light emitting and laser diodes, solid-state lighting, photovoltaics, RF and microwave electronics, and gas sensors. However, the resulting device performance strongly depends on the quality, both compositionally and structurally, of the constituent materials. Here we report the combined use of high resolution transmission electron microscopy imaging, micro-Raman and micro-photoluminescence spectroscopy, and local electrode atom probe tomography to understand the micro- and nanostructural properties of materials synthesized by chemical vapor deposition, including defects and impurities. Growth and doping process, sample preparation, and analysis results will be discussed.

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Date submitted: 19 Nov 2010

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