

Abstract Submitted
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Growth and Characterization of ZnMgO Nanowires by Thermal Chemical Vapor Deposition GANG SHEN, SHAWN DAVID WILBERT, NICK HARRIS, NABIL DAWAHRE, WILLIAM BAUGHMAN, LEE BUTLER, JOSEPH BREWER, SEONGSIN MARGARET KIM, PATRICK KUNG — Zinc oxide (ZnO) nanowires are promising structures for nano-optoelectronic devices and applications ranging from solid-state lighting to photovoltaics because of the wide bandgap and large exciton binding energy of ZnO, in addition to serving as template matrices for nanoscale sensors. Alloying ZnO with MgO to achieve ternary ZnMgO compounds represents a potential approach for future optoelectronic heterostructure devices. Well-aligned ZnMgO nanowires (NWs) were grown on a sapphire substrate by thermal Chemical Vapor Deposition (CVD). The alignment of the ZnMgO NWs was confirmed by x-ray diffraction and electron microscopy along with elemental composition information through EDS analysis. The optical and vibrational properties of the ZnMgO NWs were studied by micro-Raman and micro-photoluminescence (PL) measurement. Through the combination of confocal laser scanning microscopy and the micro-Raman and micro-PL, the ZnMgO NWs were imaged at sub-micron resolution.

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