

Abstract Submitted  
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**Effect of growth kinetics on intersubband transitions in GaN/AlN multiple quantum wells**<sup>1</sup> J. YANG, S.D. CARNEVALE, T.F. KENT, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH. 43210, M.R. BRENNER, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH, 43210, R.C. MYERS, Department of Materials Science and Engineering, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH. 43210 — The large conduction band offset of nearly 2 eV between GaN and AlN provides very large electron confinement that could be useful for ultrafast intersubband-based photonics operating at telecommunications wavelengths. However, it is difficult to control interface roughness and compositional profiles with monolayer precision, which is crucial for engineering sublevels for quantum cascaded intersubband photonics. Here we examine the effect of Ga-rich and N-rich growth conditions of highly-confined GaN/AlN multiple quantum wells prepared by plasma-assisted molecular beam epitaxy. Structural quality is examined through high-resolution x-ray diffraction and atomic force microscopy. The efficiency of intersubband and interband transitions in these heterostructures is measured using temperature dependent absorption and photoluminescence spectroscopy.

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