

Abstract Submitted  
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**Ferromagnetic  $Mn_{3-\delta}Ga$  On Wurtzite GaN: Initial Stages Of Growth By Molecular Beam Epitaxy** KANGKANG WANG, ABHJIT CHINCHORE, ERDONG LU, WENZHI LIN, JEONGIHM PAK, ARTHUR R. SMITH, Nanoscale and Quantum Phenomena Institute, Department of Physics and Astronomy, Ohio University, Athens, OH 45701 — Ferromagnetic (FM) metal/wide band-gap bilayers are of great interest due to their potential for novel spintronics applications, such as blue and ultra-violet spin light-emitting diodes<sup>[1]</sup>. It has been reported<sup>[2]</sup> that  $Mn_{3-\delta}Ga$ , a promising FM alloy, can be grown epitaxially on top of w-GaN(0001) with controllable magnetism via controlling of the Mn:Ga flux ratio. Here we report studies on the initial stages of growth of MnGa on w-GaN. Growth experiments were carried out in a UHV chamber using molecular beam epitaxy with rf ( $N_2$ )-plasma, on both N- and Ga-polar substrates. Reflection high-energy electron diffraction (RHEED) data suggest that at the initial stages of growth, the surface structures depend on the substrate polarity. This may be due to the structural differences between the N-polar and the Ga-polar GaN surfaces. Stoichiometry dependence of initial stages of growth is also being investigated. This work has been supported by DOE (Grant No.DE-FG02-06ER46317) and NSF (Grant No.0304314). Equipment support from ONR is also acknowledged. [1] S.A.Wolf *et al*, Science **294**, 1488 (2001) [2] E.Lu *et al*, Phys.Rev.Lett. **97**, 146101 (2006)

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