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Exploring Possible Magnetic Properties of Ordered Manganese Monolayer on Wurtzite GaN A.R. SMITH, A. CHINCHORE, K. WANG, W. LIN, T. CHEN, Y. LIU, J. PAK, Nanoscale and Quantum Phenomena Institute, Department of Physics & Astronomy, Ohio University, Athens, OH 45701 — For future spin-based device technologies, it is crucial to investigate magnetic material systems using techniques having high magnetic resolution. Spin-polarized scanning tunneling microscopy has proven to be extremely powerful for resolving magnetic structure down to even the atomic scale. Of great interest lately are transition-metal-on-semiconductor systems. We have recently discovered a well-ordered Mn monolayer having $\sqrt{3}\times\sqrt{3}$-R30^o structure, formed on wurtzite gallium nitride.[1] It is intriguing to explore the possibility of atomic-scale magnetic ordering in this system. For this purpose, we have designed a new SP-STM system combined with a highly flexible, epitaxial nitride growth facility. The new SP-STM has been designed for variable-low-temperature operation within an applied magnetic field of up to +/- 4.5 Tesla. Initial results with the new system are expected within the very near future. Work is supported by DOE (Grant No.DE-FG02-06ER46317) and NSF (Grant No. 0730257). Equipment support from ONR is also acknowledged. [1] A. Chinchore et al., Appl. Phys. Lett. **93(18)**, 181908 (2008).

A. R. Smith
Nanoscale and Quantum Phenomena Institute, Department of Physics &
Astronomy, Ohio University, Athens, OH 45701

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