Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Room-temperature spin-polarized scanning tunneling microscopy of antiferromagnetic $Mn_3N_2(001)$ nanopyramids[1] KANGKANG WANG, ARTHUR SMITH, Ohio University Nanoscale and Quantum Phenomena Institute — Antiferromagnets play a key role in spintronic applications owing to the exchange bias effect. As devices miniaturize in size and dimension, novel magnetic structures dramatically different from the bulk often emerge. Here we apply spin-polarized scanning tunneling microscopy (SP-STM) at room temperature to study the local magnetization of antiferromagnetic nitride nanostructures. $Mn_3N_2(001)$ thin films have been grown on MgO(001) substrates using molecular beam epitaxy and transferred *in situ* to a home-built SP-STM for magnetic imaging. Results show that the surface consists of alternating chemically in-equivalent atomic terraces. Using SP-STM with dI/dV mapping, different layers can be clearly discriminated due to their different conductances. These differences in conductance are a result of not only the different chemical environments, but also the spin ordering and broken symmetry at the surface. Contrary to expectations, a layer-wise alternating surface anisotropy in these nanopyramids is observed. The presented study enables further investigations of the interplay between growth defects and the formation of intriguing antiferromagnetic domains.

[1]Authors gratefully acknowledge support from the U.S. DOE and the NSF.

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Date submitted: 11 Nov 2011 Electronic form version 1.4