Abstract Submitted
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Direct atomic imaging of Mn in the GaN growth surface: High-density, Two-dimensional, Striped Superstructures[1] KANGKANG WANG, Ohio University, NOBORU TAKEUCHI, ABHIJIT CHINCHORE, WENZHI LIN, ARTHUR SMITH — A class of novel well-ordered striped superstructures have been observed by depositing submonolayer Mn onto GaN(0001)-"1×1" surface. These superstructures consist of stripe domains along $[1\bar{1}00]_{GaN}$ with various widths, while scanning tunneling microcopy images resolved a common local $\sqrt{3}\times\sqrt{3}$-R30° structure for the stripes. Combined with first-principles calculations, a new two-dimensional structural model is proposed having a dense Mn_xGa_{1-x} surface layer. Mn atomic sites within the GaN surface are directly identified. A spin-induced asymmetry in the Mn electronic structure is revealed in real-space for the narrow stripes. These findings explain the behavior of Mn atoms in the GaN growth surface and herald the development of magnetic nanostructures on GaN surfaces.

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