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In-Situ Atomic-Scale Scanning Tunneling Microscopy Investigations of Cr on GaN Surfaces[1] ARTHUR R. SMITH, MUHAMMAD HAIDER, ERDONG LU, WENZHI LIN, RONG YANG, COSTEL CONSTANTIN, HAMAD AL-BRITHEN[2], Ohio University, SMITH GROUP TEAM — Currently there is much interest in the magnetic properties of magnetically-doped nitride semiconductors. For purposes of doping GaN with Mn or Cr, it is important to investigate the action of these dopants on the clean surface under epitaxial growth conditions. In this study, we investigate the surface of GaN which has been doped with Cr during molecular beam epitaxial growth using in-situ scanning tunneling microscopy. In addition, we also investigate the surface of GaN which has been exposed to a fraction of monolayer of Cr deposited directly on the clean surface. For low concentrations, we find that the Cr can incorporate into the Ga lattice positions, participating in the known 3x3 and 6x6 reconstructions of GaN(000-1). For higher percentages of Cr, a novel Cr nanowire structure forms at the surface. Efforts are underway to study the magnetic properties of these surfaces.

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