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Self-Assembly of Magnetic Molecules on GaN(0001) SAW W. HLA, DANDA P. ACHARYA, VIOLETA IANCU, ERDONG LU, ARTHUR R. SMITH, Ohio University — Self-assembled clusters of TBrPP-Co molecules are formed on a freshly grown nitrogen polar GaN (0001) surface. The structural and electronic properties of the molecular clusters are then studied by using a scanning tunneling microscopy and spectroscopy at low-temperature (4.6 K) under an ultra-high-vacuum condition. The TBrPP-Co molecule has a spin-active cobalt atom caged at the center of porphyrin unit and four bromo-phenyl groups are attached to its four corners. On GaN(0001), the molecules bind the surface through the bromo-phenyl units and form a saddle conformation, in which the central part of the molecule is bent by lifting the two pyrrole units of the porphyrin macrocycle. Within the self-assembled molecular clusters on this surface, the molecules are aligned either parallel or 90 degree rotated to each other. This molecule-substrate system may be useful for spintronic applications. This work is supported by NSF-NIRT grant number DMR 0304314.

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