

Abstract Submitted
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STM studies of a novel organic/inorganic interface: TCNE/GaAs(110)¹ N.M. SANTAGATA, J.A. GUPTA, The Ohio State University — Recent efforts in the field of spintronics have focused on the integration of organic molecular magnets with inorganic semiconductors. Little is known, however, about the interfacial chemistry and physics that occurs between the organic spin injector and the inorganic device structure. We are therefore studying tetracyanoethylene/GaAs(110) as a model system to gain a basic understanding of the properties that emerge upon integration of these materials. Utilizing low temperature (7 K) ultrahigh vacuum scanning tunneling microscopy we are able to identify both bonding geometries and bonding sites for isolated TCNE molecules on the unreconstructed GaAs(110) surface. Scanning tunneling spectroscopy can provide a detailed look at the interfacial electronic structure, including alignment of individual molecular orbitals with respect to the band structure of the underlying substrate. Single transition metal–TCNE complexes can be realized and investigated via atomic/molecular manipulation.

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