

Abstract Submitted
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Imaging and Spectroscopy of Diamondoid-Fullerene Hybrid Molecules¹ J.C. RANDEL, H.C. MANOHARAN, Stanford University — Diamondoids have attracted attention as potential building blocks for nanometer-scale electronic and mechanical devices. The ability to functionalize diamondoids with various atomic and molecular groups enables customizable chemistry, as well as tunable electronic properties. Recently, the library of realizable functional groups has expanded beyond a few atoms, and now includes C₆₀ fullerenes. This addition provides a novel opportunity to study a material that combines the sp² and sp³ forms of carbon bonding in one hybrid molecule. We investigate these molecules using scanning tunneling microscopy and spectroscopy. We find that thin films of the molecules pack in a well-ordered lattice on Au(111), and report on spectral measurements with single-molecule resolution. We comment on the connection between strong features in these electronic structure measurements and the nature of electron transport through single hybrid molecules.

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