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Scanning Tunneling Spectroscopy of Self-assembled Nanoribbons of C_{60}-Diamantane Hybrid Molecules J.C. RANDEL, F.C. NIESTEMSKI, Stanford University, S. MELINTE, UCL Belgium, H.C. MANOHARAN, Stanford University — As transistors approach the nanoscale, single molecules become viable alternatives for macroscopic devices. In terms of utilizing carbon, diamondoids – single cages of the bulk diamond lattice – have recently become available as the smallest units to explore these structures. We use low temperature scanning tunneling microscopy to perform electron mapping studies on self-assembled monolayers of novel hybrid molecules consisting of a single C_{60} fused with the double diamond cage called diamantane. Unlike standard C_{60} self-assembled monolayers, these hybrid molecules tend to form strips or nanoribbon assemblies as opposed to large-scale single sheets. We find spectroscopic differences between these hybrid molecules and the "parent" molecule C_{60}, and utilize spatial mapping to find electronic differences in the edge states of these ribbons. We discuss these results in terms of rectification and the potential of these hybrid molecules for molecular electronics.

[X] Prefer Oral Session
[ ] Prefer Poster Session

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