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Molecule/Surface Interactions and the Control of Electronic Structure In Epitaxial Charge Transfer Salts[1] GEOFFREY ROJAS, P. GANESH, SIMON KELLY, BOBBY SUMPTER, Oak Ridge National Laboratory, JOHN SCHLUETER, Argonne National Laboratory, PETRO MAKSYMOVYCH, Oak Ridge National Laboratory, CENTER FOR NANOPHASE MATERIALS AND SCIENCES TEAM, CHEMISTRY AND MATERIALS SCIENCE DIVISION TEAM — The two-dimensionality of the fulvalene-based superconducting charge transfer salts has lead to an increasing interest in the epitaxial growth and local probe analysis of monolayer CTS films. Curiously, these studies have shown remarkable differences in both the electronic structure and topography of the monolayers grown on metals, suggesting that the organic/metal interactions introduced by epitaxial growth strongly influence the resulting structures. Through recent experiments on monolayer films of the CTS $(ET)_2SF_5CH_2CF_2SO_3$ and the bare fulvalene ET grown on Ag(111), we illustrate what effect the metal-molecule interaction has on the electronic structure and 2D charge transport of epitaxial CTS and how this differs from the bare fulvalene. Through a comparative analysis of the differences in stoichiometry and topography of these and heretofore published systems, the relative roles of ionic bonding, surface chemisorption, and hybridization for the preparation of this and future compounds are explored.

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