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Low temperature Scanning Tunneling Spectroscopy of C60 films on the Cu(100) surface¹ DAVID R. DAUGHTON, NANCY M. SANTAGATA, JAY A. GUPTA, Physics Department, The Ohio State University — In contrast to other single crystal metal surfaces, C60 adopts four unique orientations on the Cu(100) surface. The intramolecular structure of C60 stabilized in monolayer films on a Cu(100) surface has been studied with low temperature (5 K) scanning tunneling microscopy and spectroscopy. We present the first spectroscopy and spatial imaging of molecular orbital resonances from LUMO to LUMO+3 for the four distinct adsorption geometries. Shifts in the LUMO state indicate different degrees of charge transfer for the four geometries. We aim to correlate changes in C60 electronic structure with chemical modification via electron-induced polymerization. Density functional theory (DFT) computations of the C60/Cu(100) system have been carried out in support of the experimental results.

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David Daughton
The Ohio State University

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