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Electronic Structure of Organic-Metal Interfaces[1] SUNG-YOUNG HONG, PO-CHUN YEH, JERRY DADAP, RICHARD M. OSGOOD, Columbia University — Organic self-assembled monolayers (SAMs) are important to the understanding of molecular electronics as well as the study of charge transfer in photovoltaic applications. We use two-photon photoemission (2PPE) to investigate the interfacial electronic structure of SAMs on metals. In particular we study the unoccupied states of thiolates and fluorinated thiolates on Cu(111) as a function of molecular coverage using both monochromatic and time-resolved bichromatic 2PPE. While accurate measurements have been made on mostly full monolayer systems, similar effort on detailed coverage-dependence has not yet been reported. We track the formation of the interfacial dipole layer as well as the emergence of intermediate and final states vs. coverage.

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