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Tunneling Spectroscopy of Unoccupied Electronic States of Benzoate on Cu(110) ALEX PRONSCHINSKE, DANIEL DOUGHERTY, Department of Physics, North Carolina State University — Benzoic acid adsorbed on Cu(110) self assembles into a variety of structurally robust and highly ordered superlattices [1]. Some of these are known to involve Cu-adatom-mediated bonding in manner similar to that proposed for the well-known thiolate SAM's [2]. We have employed scanning tunneling spectroscopy at room temperature in both constant current mode and constant height mode in order to observe the unoccupied electronic structure of benzoate adsorption structures. Electronic states are observed that are assigned as π^* orbitals and image potential derived states. The energy of the π^* state corresponds remarkably well with published ground state DFT calculations [3] and image potential state energies suggest substantial adsorption-induced work function changes. [1]Frederick et al., Surf. Rev. Lett. 3, 1523 (1996). [2]Maksymovych et al., Phys. Rev. Lett. 97, 046804 (2006). [3]Lennartz et al., Langmuir 25, 856 (2009).

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