

Abstract Submitted
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Band folding of the image potential states at the phthalocyanine/Ag interface¹ BENJAMIN CAPLINS, DAVID SUICH, ALEX SHEARER, University of California, Berkeley – Dept of Chemistry, ERIC MULLER, University of Colorado, Boulder – Dept of Physics, CHARLES HARRIS, University of California, Berkeley – Dept of Chemistry — Two-photon photoemission is used to probe image potential states at the metal-molecule interface. We compare model systems of monolayer metal-free phthalocyanine and cobalt phthalocyanine adsorbed on Ag(100) and Ag(111). Both phthalocyanines show very similar image state binding energies and dispersions. Strikingly, the spectra clearly show the opening of a band gap in the first image potential state, regardless of the presence of the electron dense metal center. Experiments conducted on both Ag(100) and Ag(111) determined the role of the surface symmetry and projected bulk band structure. Our results are contrasted to the PTCDA/Ag(100) interface. Finally, we compare to experiments a model that takes into account both the band structure of the substrate and the phthalocyanine induced corrugation of the potential energy landscape.

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