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Coverage Dependent Assembly of Anthraquinone on Au(111)

BRAD CONRAD, Appalachian State Univ, ANDREW DELOACH, North Carolina State University, THEODORE EINSTEIN, University of Maryland - College Park, DANIEL DOUGHERTY, North Carolina State University — A study of adsorbate-adsorbate and surface state mediated interactions of anthraquinone (AnQ) on Au(111) is presented. We utilize scanning tunneling microscopy (STM) to characterize the coverage dependence of AnQ structure formation. Ordered structures are observed up to a single monolayer (ML) and are found to be strongly dependent on molecular surface density. While the complete ML forms a well-ordered close-packed layer, for a narrow range of sub-ML coverages irregular close-packed islands are observed to coexist with a disordered pore network linking neighboring islands. This network displays a characteristic pore size and at lower coverages, the soliton walls of the herringbone reconstruction are shown to promote formation of distinct pore nanostructures. We will discuss these nanostructure formations in the context of surface mediated and more direct adsorbate interactions.

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