

Abstract Submitted
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STM Studies of Iron Phthalocyanine on Fe(110) Films¹ ANDREAS SANDIN, DAN DOUGHERTY, J. E. (JACK) ROWE, NC State University — We have observed molecular-scale-resolution arrays of Iron Phthalocyanine (FePc) molecules which we adsorbed at room temperature on thin ($\sim 5\text{-}10$ ML) films of Fe(110). These molecular layers were grown in a UHV Omicron/AFM/STM/ multi-probe system at NC State in the Physics Department at pressures of $\sim 10^{-10}$ torr. Our results indicate a strong inter-molecular interaction that produces well-ordered films at monolayer coverage. For lower coverage ($\sim 0.2 - 0.6$ ML) the FePc-Fe substrate interaction strongly dominates and the STM image morphology has only small clusters of 2-6 molecules. Our data clearly shown that the FePc molecules are lying flat on the surface in the ordered ~ 1 ML samples since we see evidence of the carbon-ring ligands in some images. We discuss the possibility of spin-dependent effects between the molecular Fe and the substrate Fe as an example of potential molecular-modified spin-based devices. Initial STM-spectroscopy including both I vs. V and Z vs. V results are consistent with our structural observations.

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