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"Band bending" in copper phthalocyanine on hydrogen-passivated Si(1 1 1)

M. Gorgoi, and D.R.T. Zahn

Insitut für Physik, Technische Universität Chemnitz, D-09107 Chemnitz, Germany

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Abstract

Ultraviolet photoemission spectroscopy (UPS) and inverse photoemission spectroscopy (IPES) were employed to study the electronic density of states of copper phthalocyanine (CuPc) layers deposited onto hydrogen passivated Si(1 1 1) substrates. The highest occupied and lowest unoccupied molecular orbital (HOMO respectively LUMO) features are found to shift gradually in the same direction with increasing film thickness. At approximately 15 nm, the shifts saturate with a total amount of about 0.4 eV.

Keywords: Copper phthalocyanine; Ultraviolet photoemission; Inverse photoemission; LUMO; HOMO

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