
Adsorption-Induced Kondo Effect in Metal-Free Phthalocyanine on Ag(111)

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Supporting Information Available

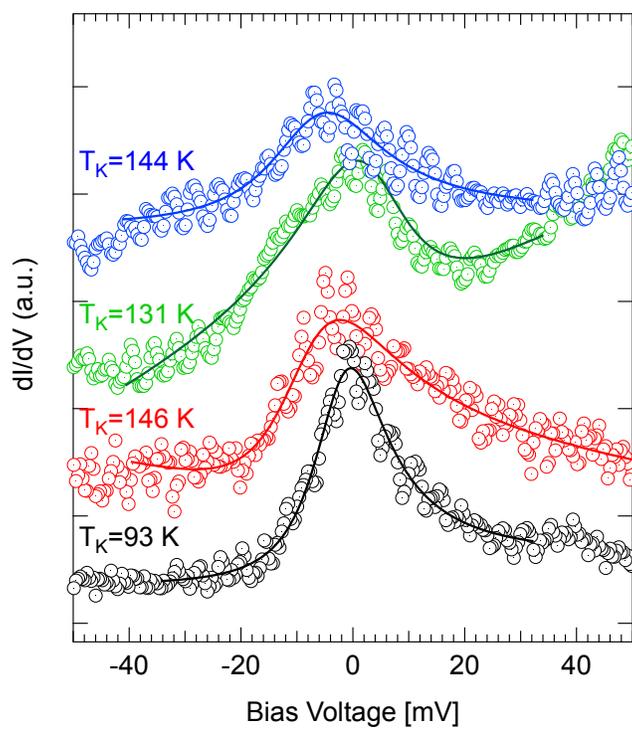


Figure S1: Set of 4 STS curves acquired over 2HPc molecules in G-phase (dotted lines) along with their Fano fits (solid lines) and their corresponding extracted Kondo temperatures T_K . A vertical shift was added for clarity.

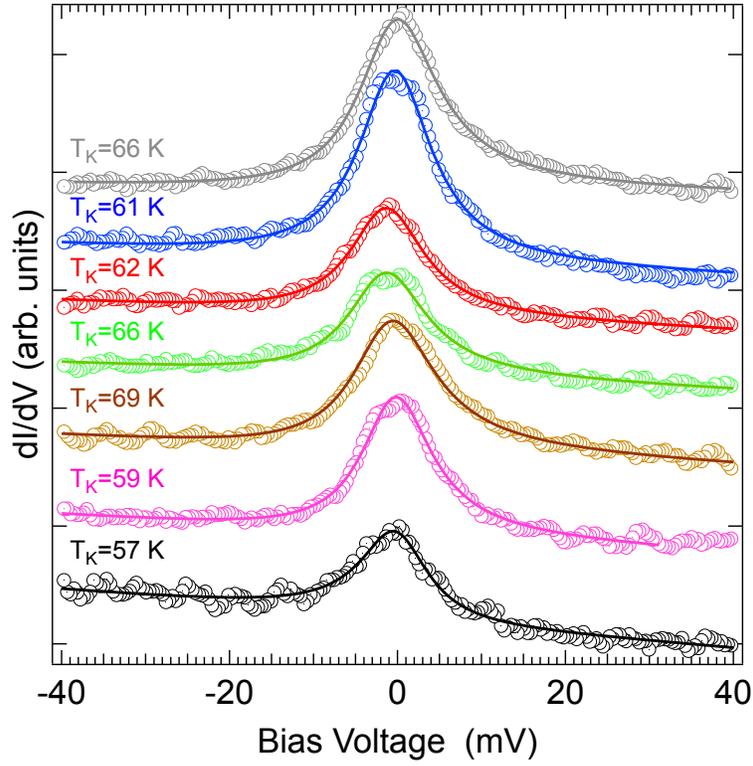


Figure S2: Set of 7 STS curves acquired over 2HPc molecules arranged in C-phase (dotted lines) along with their Fano fits (solid lines) and their corresponding extracted Kondo temperatures T_K . Set point is $V_b = 1$ mV, $I_t = 200$ pA. A vertical shift was added for clarity.

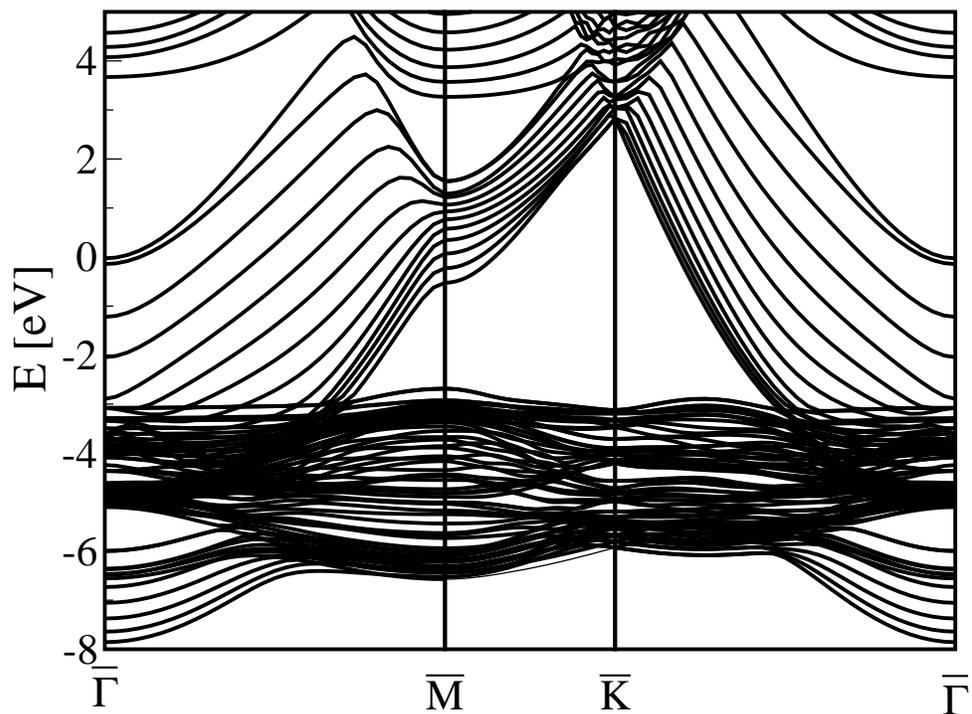


Figure S3: Calculated band structure of the 12-layers slab of Ag in its primitive cell.

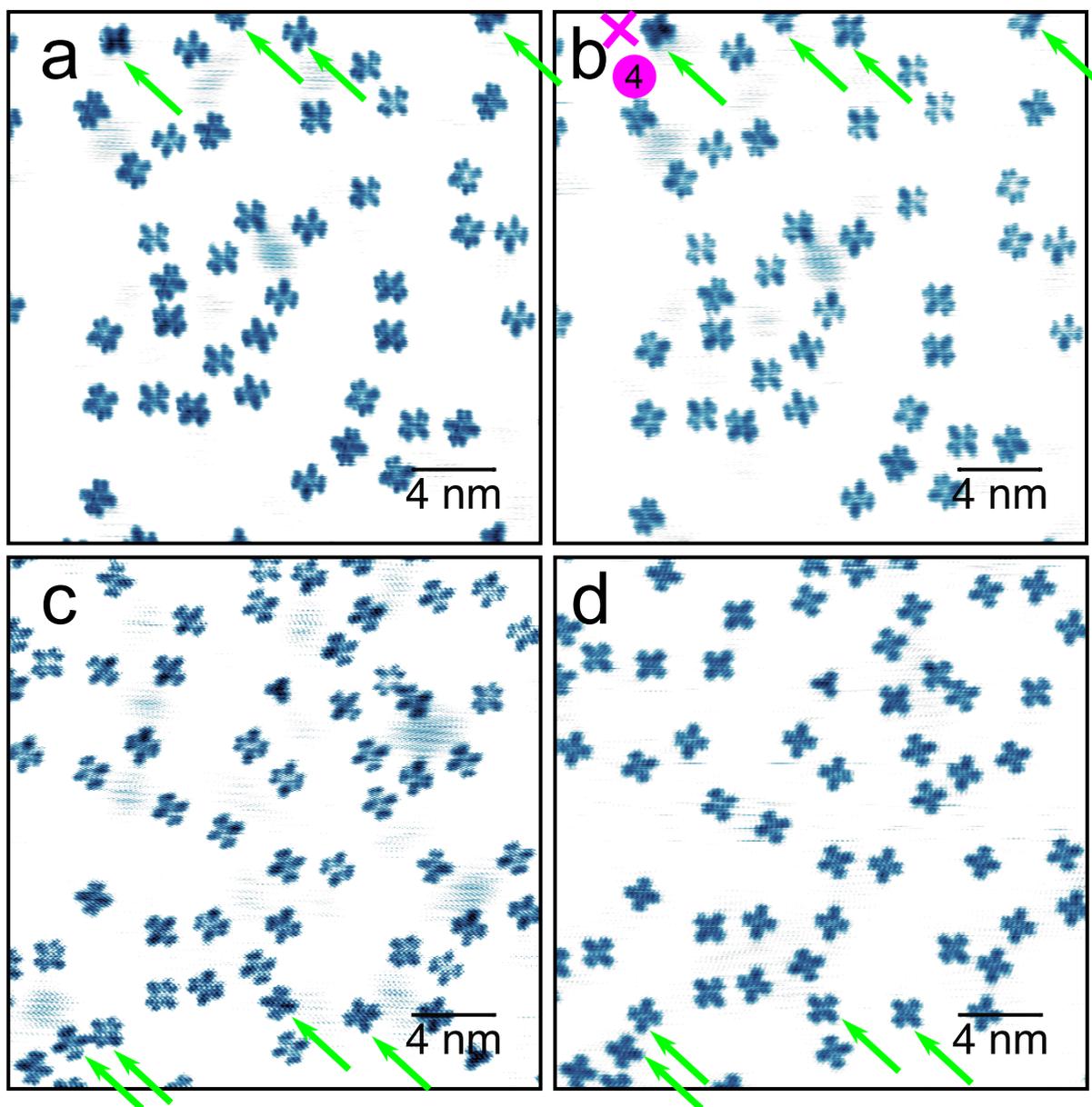


Figure S4: Pairs of STM images recorded successively (a,b) and (c,d). Tunneling current: 200 pA. Bias voltage: (a) 1 mV, (b) 7 mV, (c) -7 mV and (d) 100 mV. Green arrows point to molecules that have rotated between scans. The color scale is such that dark blue colors represent high z values. The cross in (b) corresponds to spectrum number 4 in Fig.4(a).

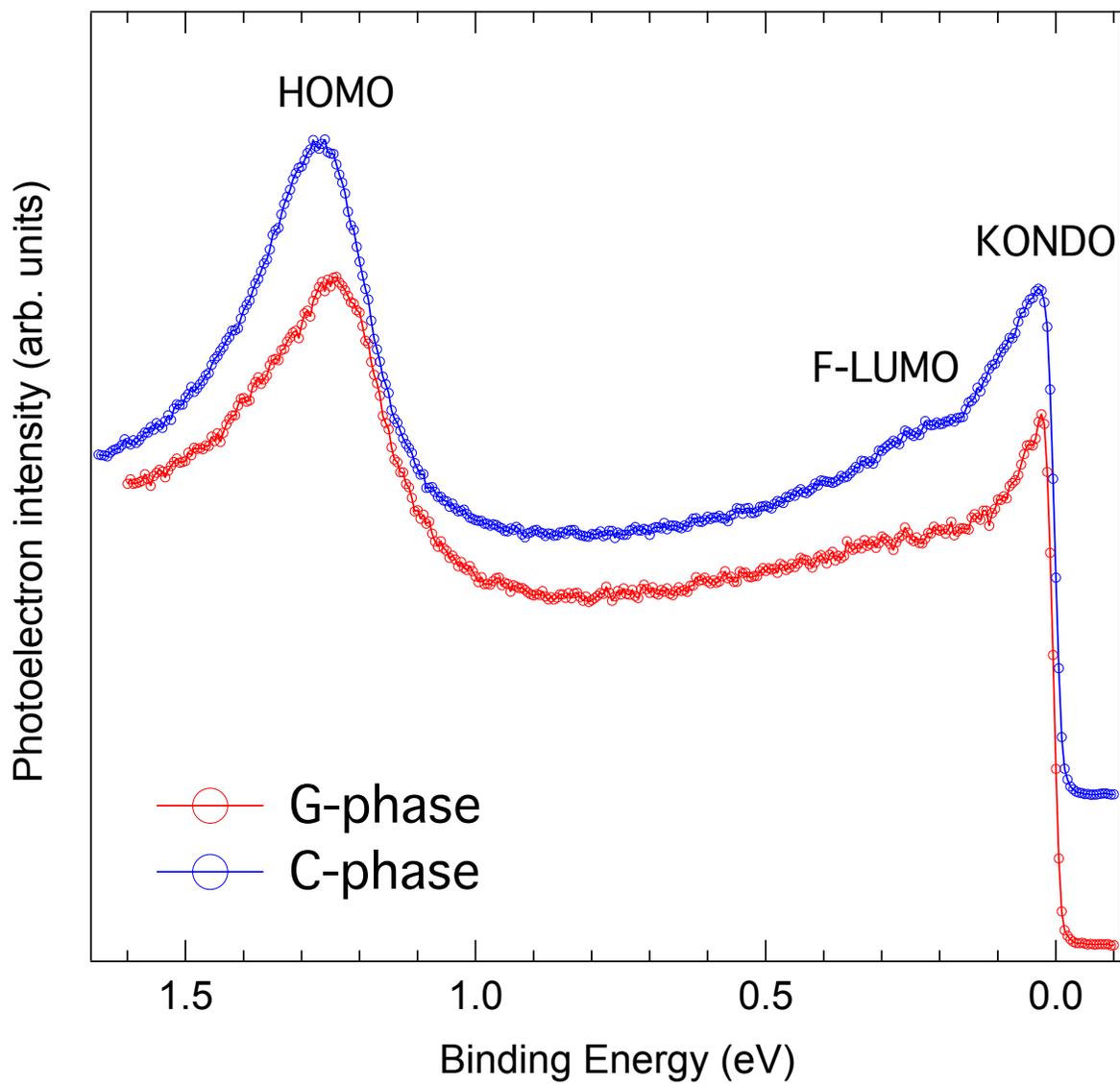


Figure S5: UPS spectra recorded at $T=9$ K on G and C-phases. Spectra have been shifted vertically for clarity.

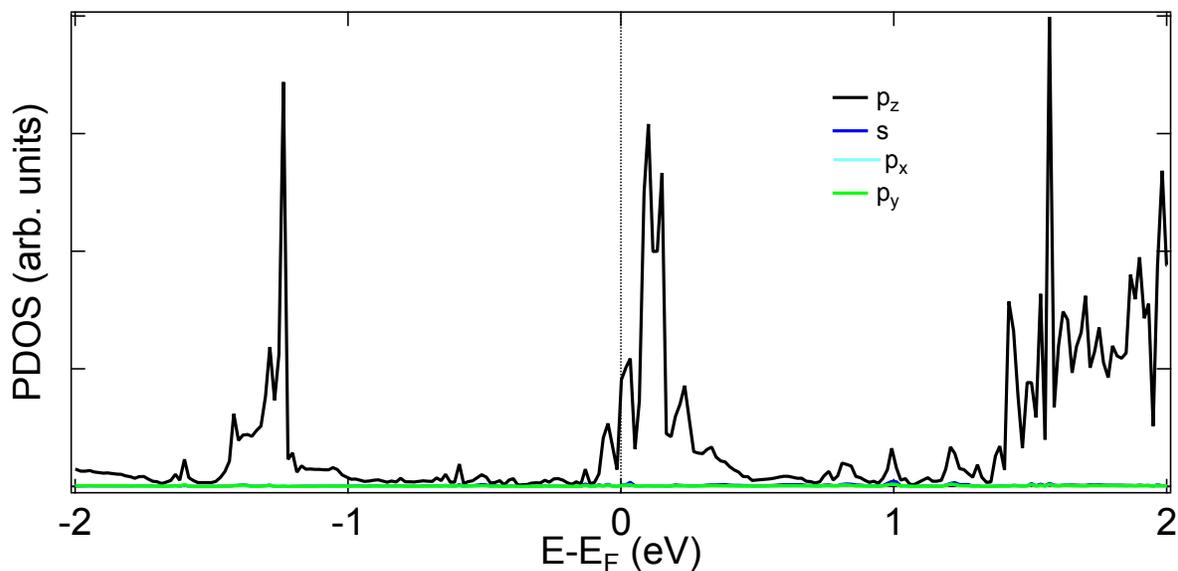


Figure S6: Computed density of states projected onto atomic orbitals of 2HPc on Ag(111) for molecules assembled in 7×7 arrangement.

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The appearance of the Kondo resonance is sensitive to the state of the tunneling tip especially after tip conditioning by dipping it into the Ag surface and/or applying bias voltage pulses. When the Kondo resonance is absent, it is so indistinctively of the probed molecule. Usually, it reappears after further tip treatments. This effect was also observed on another kind of metal-organic interface involving a phthalocyanine ligand on Ag(111) (see reference : J. Granet *et al.*, *Nanoscale* **2018**, 10, 9123, Figure S7 in supplementary information).