Near- and Far-Field Effects on Excited States at Organic Semiconductor / Metal Interfaces

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We will present our recent results on the interfacial electronic structure in the ground and excited state manifold of vanadyl naphthalocyanine on HOPG. This system permits us to measure both ground and excited state polarizabilities, recently implicated in determining the interface dipole at organic/organic' heterojunctions but typically difficult to measure. Furthermore, we find evidence of anion states whose energy is strongly modulated by the electrostatic environment generated at the interface. Energies of both excitonic and transport levels can therefore be influenced considerably through careful control of the interface structure. Time permitting we will also discuss the interface formation of this dipolar molecule on Au (111) 22 x sqrt(3) in order to understand the influence of a much more electron-rich surface on the molecular electronic structure. These findings illustrate that interfacial electrostatic fields may therefore be used to manipulate in a concrete fashion charge transfer processes such as indirect photoinduced interfacial electron transfer.