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Charge carrier dynamics at the sexithiophene/Au(111) interface
ERWAN VARENE, ISABEL MARTIN, MARTIN WOLF, PETRA TEGEDER, Freie Universitaet Berlin, AG WOLF TEAM — Time-resolved two-photon photoemission (2PPE) spectroscopy is employed to determine the electronic structure and charge carrier dynamics at the sexithiophene (6T)/Au(111) interface. The oligothiophene 6T, a π-conjugated chain-like planar molecule, has been widely investigated because it serves as a model system for the structural less controllable polythiophene. Furthermore it is used in organic field effect transistors and in bulk heterojunction photovoltaic cells. We found the HOMO to be located at -1.5 eV and two 6T-derived unoccupied states at 1.2 and 3.0 eV with respect to the Fermi level. The state at 1.2 eV can be assigned to a localized exciton, which possesses a lifetime of 500 fs. The state at 3.0 eV originates from the LUMO+1, having a lifetime of $\sim$ 150 fs.

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