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Molecular organization: the role of substrate interaction[1] MARTIN OEHZELT, KFU Graz, Austria, LEONHARD GRILL, FU Berlin, Germany, STEPHEN BERKEBILE, GEORG KOLLER, FALKO P. NETZER, MICHAEL G. RAMSEY, KFU Graz, Austria — The influence of the surface chemistry is studied for para-sexiphenyl (6P) grown on clean, partly and fully oxygen reconstructed Cu(110). LT-STM, NEXAFS and ARUPS measurements were carried out to determine the exact geometry (orientation and registry) and the nature of the bond of the molecules to the substrate. On clean copper and on the partly reconstructed surface the molecules lie flat on the surface, having a similar strong bond due to backdonation, but are adsorbed in opposite directions: [1-10] and [001], respectively. On the full reconstructed surface the 6P molecules are pointing in [001] direction and their aromatic planes have a significant tilt angle to the substrate arising from the weak bond to the surface and adopting the surface corrugation. Because of the flexibility of the Van der Waals interaction, dominating the growth on this surface, the resulting layer is similar to a 6P(20-3) bulk crystal plane but modified due to the constraints of commensurability. This increase in the tilt angle exhibits a new stress release mechanism unknown and inaccessible for inorganic heteroepitaxy.

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