

## Vertical Electronic Interaction in DB6P on Ag(111)

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[n]Phenacene [1] have gained significant attention for their potential application in organic field-effect transistors (OFET) [2,3]. They are stable under ambient conditions, demonstrate high charge mobility, and are chemically easily tailorable for the design of desired electronic, optical, or mechanical properties.

We investigate the growth and electronic properties of DiBenzo[6]Phenacene (DB6P) adsorbed on a Ag (111) surface using scanning tunneling microscopy and spectroscopy. DB6P is a [6]Phenacene derivative with the phenacene structure extended by a benzene ring (Benzo) at each of the two (Di) ends. In the first layer, DB6P forms a regular, rows-wise network with the molecular plane parallel to the surface. In the second layer, the growth continues row-wise with dimerized but unequally tilted DB6Ps. This growth is corresponding previous observations on [n]Phenacenes with the exception that for DB6P, the rows in the first and second layer are rotated against each other. This rotation is manifested in a respective modulation of the molecular electronic states. Moreover and in difference to [n]Phenacenes, the experimental results indicate a pinning of molecular states through the vertical electronic interaction. We will present the experimental findings and discuss our interpretation.

[1] Noriko Komura et al. Characteristics of [6]phenacene thin film field-effect transistor. *Phys. Lett.* 2012,101, 083301.; [2] Yanting Zhang et al. Photochemical synthesis and device application of acene-phenacene hybrid molecules, dibenzo[n]phenacenes (n = 5-7). *Chem. Commun.*, 2021,57, 4768-4777; [3] Hideki Okamoto et al. Synthesis of the extended phenacene molecules, [10]phenacene and [11]phenacene, and their performance in a field-effect transistor. *Science and Reports*, 9, 4009.

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