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Guest-host interaction of C_{60} adsorbed on an ordered layer of phthalocyanine derivatives TOMAS SAMUELY, MEIKE STOEHR, NIKOLAI WINTJES, University of Basel (Switzerland), THOMAS A. JUNG, Paul Scherrer Institute (Switzerland), MARCO HAAS, SHI-XIA LIU, SILVIO DECURTINS, University of Bern (Switzerland) — Symmetrically substituted phthalocyanines (Pcs) with eight peripheral di-(tert-butyl)phenoxy (DTPO) groups self-organize on noble metal substrates. The rotational degrees of freedom, specific for the DTPO substituents, allow a bowl-like conformation of the Pc derivatives and thus, hosting of the C_{60} molecules in two clearly distinguishable binding sites. Moreover, controlled manipulation of the C_{60} by the STM tip enables switching from one site to the other. Since Pcs are well-known electron donors and C_{60} molecules are good acceptors, it can be conceived as a system with two morphologically different donor-acceptor complexes, individually addressable by an STM tip. Preliminary STS analysis shows vast differences in the electronic properties. Exploration of such a system is of great interest because of its similarity to fundamental biological processes (photosynthesis, respiration), as well as its potential for application in energy storage, conversion, nanoelectronics, etc.

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