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Scanning tunneling spectroscopy of organic zwitterions assembled on Si(111)-7×7 M. SILVEIRA RODRIGUES, D. BOGDAN, C.A. DUTU, B. HACKENS, S. MELINTE, Universite catholique de Louvain, Louvain-la-Neuve 1348, Belgium, M. EL GARAH, E. DUVERGER, F. PALMINO, F. CHERIOUX, Institut FEMTO-ST, CNRS, Universite de Franche-Comte, Besancon F-25044, France — We report on the molecular assembly and local electronic properties of organic zwitterions deposited on the Si(111)-7×7 surface. We analyze these molecular systems by scanning tunneling microscopy and spectroscopy down to low temperatures. The molecules adsorb at specific sites on the Si(111)-7×7 surface, forming star-shaped configurations composed of three zwitterions filling up a half unit cell [1]. The regioselectivity of the process is determined by electrostatic interactions between the substrate and the ionic species, resulting in mirrored configurations in neighboring half unit cells. Thus, we probe chiral assemblies of achiral molecules on Si(111)-7×7 by spatially-resolved tunneling spectroscopy. For all investigated systems, ab initio simulations of the relaxed structures and local density of states are compared to experimental data. [1] Y. Makoudi et al., Surf. Sci. 602, 2719 (2008).

M. Silveira Rodrigues

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