Self-assembly of functionalized anthradithiophene on Au(111)
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— We utilize scanning tunneling microscopy (STM) to characterize the initial growth
and crystallization of the high-performance, small organic molecule 2,8-difluoro-5,11-
triethylsilylethynyl (diF TESADT) on Au(111). Two ordered structures are ob-
served with diF TESADT backbone planes parallel to the substrate. Submolecular
resolution imaging of the first monolayer ordered film regions realizes structures with
close approach of fluorine-sulfur and fluorine-fluorine atoms of alternating molecules.
These measurements provide evidence for the importance of non-covalent F-S and
F-F interactions in driving 2D self-assembly. Scanning Tunneling Spectroscopy indi-
cates a 2.4 eV transport gap which is insensitive to the local domain. Structures
and growth are put in context of bulk measurements and device performance mea-
surements.

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