

Experimental details:

The experiments were all performed in a commercial ultra-high-vacuum system comprising two separate chambers for the sample preparation and STM imaging, respectively. The atomically clean and single-crystalline Au(111) and Cu(111) surfaces were prepared following the same procedure, that is, by repeated cycles of Ar ion sputtering at 600 eV and thermal annealing at 600 K. The cleanliness was subsequently confirmed by STM. The substrate was kept at room temperature during molecular deposition. Both the F₁₆CuPc and DIP molecules were commercially purchased and purified twice by gradient sublimation prior to their use. The molecules were deposited from Knudsen cells at a rate of about 0.1 monolayer (ML)/min. For the mixed layers, coevaporation was used. The same evaporation rate was kept for each molecule, and the resulting composition was adjusted by periodic opening and closing of the shutters, timed according to the desired ratio. STM observation was carried out at room temperature with chemically etched tungsten tips. While the images shown correspond to virtually full monolayer coverage samples, we observed that lower coverages displayed the same ordered structures and no other different crystalline structures.

Figure S1:

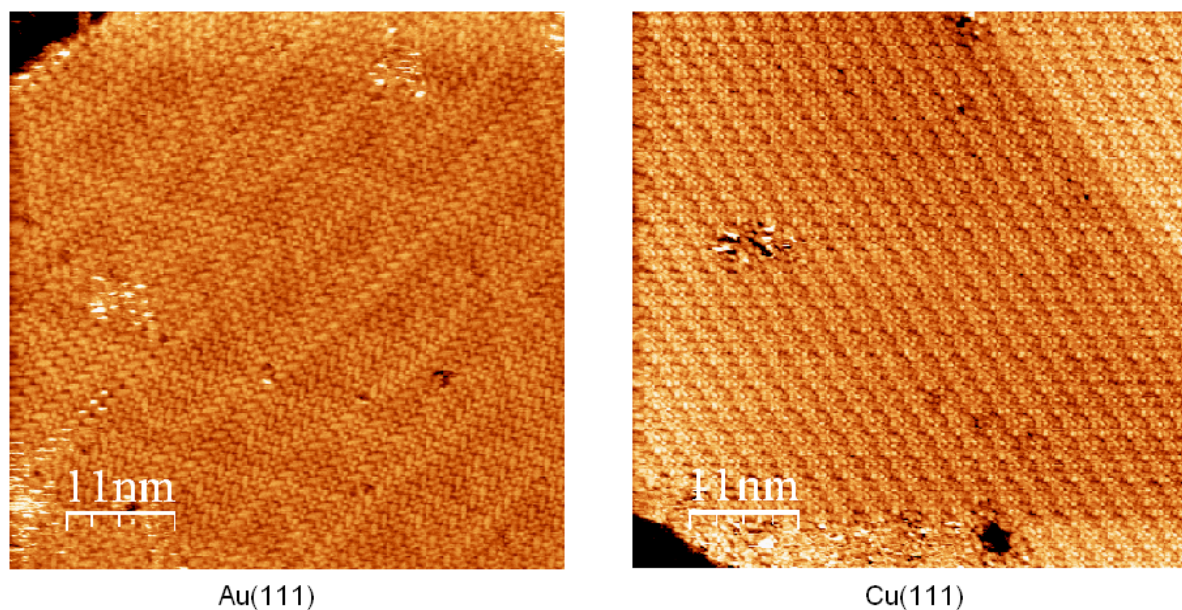


Fig. S1: 55 x 55 nm² STM images of the binary layers in a 1:1 ratio, evidencing the long range crystalline order of the demonstrated linear molecular patterns on Au(111) and Cu(111).