

Abstract Submitted
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Chiral Heterorecognition of Organic Molecules and Inorganic Surfaces THOMAS GREBER, RICHARD SCHILLINGER, JOACHIM WIDER, Physik Institut der Universitat Zurich, Switzerland, ZELIKO SLJIVANCANIN, IR-RMA, Ecole Polytechnique Lausanne, Switzerland, BJORK HAMMER, Department of Physics and Astronomy and iNANO, University of Aarhus, Denmark — Atomic kinks on surfaces are chiral and may thus be used to distinguish left-handed from right-handed molecules. Two distinct non-mirror-symmetric conformations of D- and L-cysteine were found after adsorption on Au(17 11 9)^S. This demonstrates chiral heterorecognition, i.e. enantioselectivity of *S*-kinks on vicinal Au(111). The structures as determined by angle scanned X-ray photoelectron diffraction (XPD) agree well with those from density functional theory (DFT) calculations. The calculations predict adsorption energies of ≈ 2 eV where D-cysteine binds 140 meV stronger than L-cysteine. The classical three point contact model for molecular recognition fails to explain these findings.

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