Surface selective chiral expression and chiral induction with 3-bit conformational switches: a UHV-STM study

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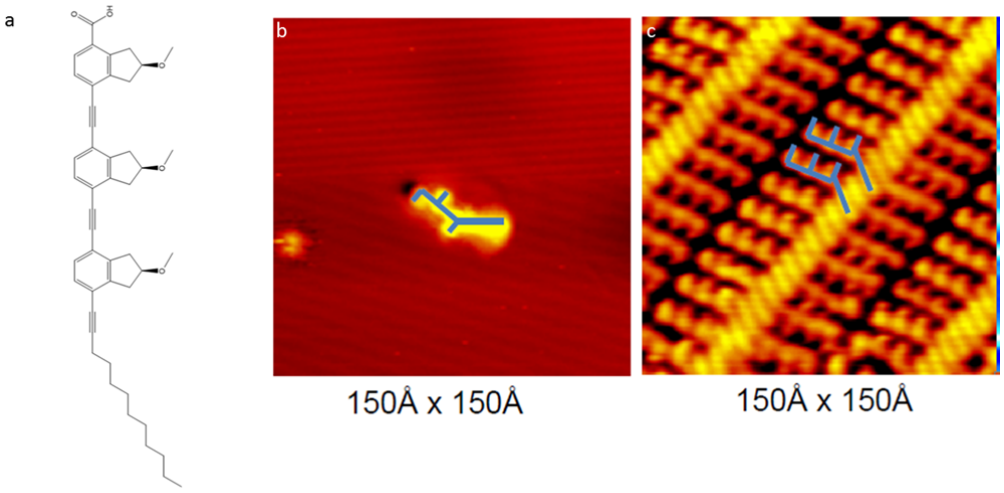
Molecular-level insights into chiral adsorption phenomena are paramount within the fields of asymmetric heterogeneous catalysis or chiral separation and may contribute to understand the origins of the chiral bias present in nature. Here, we investigate a chiral molecule[1] that is deliberately designed to address the competing aspects of molecular chiral expression on surfaces, such as the substrate surface chemistry, steric effects from the chiral centre to the surface, and the intra/inter-molecular interactions. In addition, an achiral analogue is co-adsorbed with the chiral compound, aiming to extend our understanding of the "sergeants and soldiers" mechanism[2]. By using the Scanning Tunneling Microscopy (STM), we characterize and perform a statistical analysis of the molecular adsorbates.



(a) Chemical structure of the chiral Tris-Indanyl (CTI) molecule (b) Single CTI molecule adsorbed on Cu(111) (c) CTI molecules adsorbed on Ag(111) forming highly ordered lamella structures

References:

[1]. Kjeldsen, N.D., E.D. Funder, and K.V. Gothelf, *Synthesis of homochiral tris-indanyl molecular rods.* Organic & Biomolecular Chemistry, 2014. **12**(22): p. 3679-3685.
[2]. Nuermaimaiti, A., et al. ACS Nano, 2014. **8**(8): p. 8074-8081.