Abstract Submitted
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Exploring the magnetic properties of metallophthalocyanines on a thin insulator BEN WARNER, London Center for Nanotechnology; Department of Physics & Astronomy, UCL, FADI EL HALLAK, London Center for Nanotechnology, GABRIEL AEPPLI, London Center for Nanotechnology; Department of Physics & Astronomy, UCL, MATS PERSSON, Department of Chemistry/Surface Science Research Centre, The University of Liverpool, CYRUS F. HIRJIBEHEDIN, London Center for Nanotechnology; Department of Physics & Astronomy, UCL; Department of Chemistry UCL — The scaling of electrical components to the atomic-scale limit has led to a great deal of interest in molecular electronics. Further proposals outline the use of magnetic molecules in new applications in information technology and spintronics. Since the electronic and magnetic properties of a molecule can be modified by interactions with the surfaces on which they are deposited, understanding these changes is of significant importance. Here we present studies of metal-doped pthalocyanine (MPc) molecules deposited on the thin insulator copper nitride (Cu_2N). FePc molecules have been shown to display a large magnetic anisotropy on copper oxide, which is also a thin insulator [1]. Using STM imaging and theoretical calculations we investigate how the interaction of the surface with the molecule varies and how this can affect the charge transport through the molecules. Through the application of a magnetic field and both elastic and inelastic spectroscopy, we gain access to the magnetic states of the molecule. In addition, by imaging the molecules at different bias voltages, we are able to probe the different molecular orbitals and explore how they are modified by interactions with the surface.

[1] N. Tsukahara et al., Phys. Rev. Lett. 102, 167203 (2009)

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