

Force Microscopy Investigations Of Molecules

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So far, most of the high resolution SPM studies of molecules were restricted to metallic substrates. However, insulating surfaces are necessary to avoid coupling between the molecule electrons and the substrate. Apart from the advantage to be independent of the conductance of the substrate, AFM offers the possibility to perform local force vs. distance curves [1]. The application of force microscopy on single molecules of Cu-tetra (3,5 di-t-butylphenyl) porphyrines revealed that different molecular conformations can be detected. In addition, the energetics of these simple molecular switches can be studied in a quantitative manner. Here, we present force microscopy investigations of molecules deposited on insulators. The surface of KBr(001) is structured by electron beam irradiation. Small pits of some nanometers in diameters are formed. The decoration with perylene and sub-phtalocyanine molecules shows that the pits act as molecular traps [2].

[1]Ch. Loppacher, M. Guggisberg, O. Pfeiffer, E. Meyer, M. Bammerlin, R. Luethi, R. Schlittler, J. K. Gimzewski, H. Tang and C. Joachim, *Phys. Rev. Lett.* 066107 (2003).

[2] L. Nony, E. Gnecco, A. Baratoff, A. Alkauskas, R. Bennewitz, O. Pfeiffer, S. Maier, A. Wetzels, E. Meyer and Ch. Gerber, *Nanoletters*, **4**, 2188 (2004).