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**Orientation of Fluorophenols on Si(111)** FAN ZHENG, University of Wisconsin-Madison, J.L. MCCHESNEY, Lawrence Berkeley National Lab, XIAOSONG LIU, F.J. HIMPSEL, University of Wisconsin-Madison — Oriented adsorption of switchable organic molecules at surfaces is an important prerequisite for single molecular electronics [1, 2]. As model systems we select polar fluorophenols with tailored dipole moments and investigate their adsorption on the Si(111)7×7 surface by near edge x-ray absorption fine structure spectroscopy (NEXAFS). A strong polarization dependence of the $\pi^*$ transitions is observed in fluorinated phenols, while phenol itself is isotropic. A quantitative model is developed to convert polarization-dependent NEXAFS data into orientational information. The model includes three angular degrees of freedom, two of them fixed and the other with a Gaussian distribution. Such a situation is encountered in a variety of self-assembled monolayers (SAMs) with tailored end groups [3]. [1] T. A. Jung, R. R. Schlittler, J. K. Gimzewski, Nature **386**, 696, (1997) [2] A. J. Mayne, M. Lastapis, G. Baffou, L. Soukiassian, G. Comtet, L. Hellener and G. Dujardin, Phys. Rev. B **69**, 045409 (2004) [3] Y.Y. Luk, N. L. Abbott, J. N. Crain and F. J. Himpsel, J. Chem. Phys. **120,** 10792 (2004)

Fan Zheng
University of Wisconsin-Madison

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