

Abstract Submitted
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Picosecond real time observation of low energy electron scattering from large molecules on surfaces CLAUDIO CIRELLI, Physik Institut, Universitaet Zuerich, CH-8057, Switzerland and Physikalisch-Chemisches Institut, J.L-Universitaet, D-35392 Giessen, Germany, MATTHIAS HENGESBERGER, ANDREI DOLOCAN, JUERG OSTERWALDER, THOMAS GREBER, Physik Institut, Universitaet of Zuerich, CH-8057, Switzerland, HERBERT OVER, Physikalisch-Chemisches Institut, J.L. Universitaet, D-35392 Giessen, Germany — In order to observe in real time structural changes of molecules, it is necessary to develop a technique providing both nanometer and picosecond resolution. This task is tackled with a time resolved Low Energy Electron Diffraction (LEED) experiment in a pump-probe scheme. The pump pulses are 800 nm 100 fs laser light pulses and the probe 60eV energy electron pulses. Using a novel electron gun with a measured energy resolution of 0.7eV at 100eV, we observe transient changes in the differential scattering cross section and an energy shift of the diffracted LEED spot up to about 250meV. As this energy shift is pump fluence dependent, we can assign it to the onset of a space charge effect created by the pump beam on the sample surface. Conclusions about surface space charge and molecular dynamics can be drawn by tracking this effect on the picosecond timescale. Results on the response of the bare Cu(111) surface and of C₆₀/Cu(111) will be presented. [1] A. Dolocan et al., Jap. J. Appl. Phys. 45 (2006)

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