

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Direct measurement of core-level relaxation dynamics on a surface-adsorbate system JING YIN, LUIS MIAJA-AVILA, GUIDO SAATHOFF, CHAN LA-O-VORAKIAT, MARGARET MURNANE, HENRY KAPTEYN, JILA, University of Colorado, STEFAN MATHIAS, MARTIN AESCHLIMANN, University of Kaiserslautern, Germany, MICHAEL BAUER, Christian-Albrechts-Universität zu Kiel, Germany — Electronic coupling between an adsorbate and the surface on which it resides is fundamental to the understanding of many surface interactions. However, the interaction of *highly-excited* adsorbate states is an area that has been explored only indirectly to-date. In this work, we present the first direct time-resolved observations of the lifetime of core-excited states of an atom adsorbed onto a surface. By implementing laser-assisted Auger decay on an adsorbate/surface system, we directly measure the lifetime of the $4d^{-1}$ core level of Xenon on Pt(111) to be 7.1 ± 1.1 fs. This result opens up time domain measurements of highly-excited state dynamics in materials systems where, because of complex interactions, energy-resolved measurements provide incomplete information.

Jing Yin

Date submitted: 12 Dec 2007

Electronic form version 1.4