

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Single Molecule Chemistry with Time Resolved Scanning Tunneling Microscope SHAOWEI LI, SIYU CHEN, WILSON HO, University of California, Irvine — The combination of a low temperature scanning tunneling microscope and a femtosecond laser enables the possibility to achieve femtosecond temporal resolution simultaneously with sub-nm spatial resolution. Here we demonstrate the atomic-scale coupling of femtosecond laser pulses to single molecules adsorbed on metal surfaces. The induction of electron tunneling by light makes it possible to obtain atomic scale spatial resolution, while the time delay between pairs of laser pulses provides the femtosecond time resolution. Possible single molecule chemistry induced by femtosecond lasers includes molecular motions and bond dissociation on metal surfaces.

Shaowei Li
University of California, Irvine

Date submitted: 31 Oct 2016

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