

Abstract Submitted
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Surface Reactions following Ultrafast Substrate Excitation: A Path towards Atomic Scale Resolution of High-Temperature Reactions at Metal Surfaces?¹ CHRISTOPHE HUCHON, ZHIHAI CHENG, LUDWIG BARTELS — The diffusion of CO molecules on a copper surface triggered by femtosecond optical excitations was monitored by means of a low temperature scanning tunnelling microscope (LT-STM). The method uses an experimental setup including an amplified Ti:Sa oscillator providing 85 fs laser pulses at 800nm, which are subsequently frequency-doubled. The optical system is rigidly coupled to an LT-STM. This work follows initial demonstration of the desorption and the anisotropic diffusion dynamics of CO molecules on a Cu (110) surface at a fixed laser fluence. Our adsorbate/substrate model is intended as a starting point in unveiling the energy transfer mechanism underlying picosecond and femtosecond surface processes that occur under equilibrium conditions.

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