
O 2: Invited Talk (Michael Horn-von Hoegen)

Time: Monday 10:15–11:00

Location: HSZ 02

Invited Talk

O 2.1 Mon 10:15 HSZ 02

Surface Science from Hours to Attoseconds: Mind the Gap —

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Energy dissipation plays a major role for many processes in nature. Energy transfer on a femto- to nano-second time scale is important for chemical reactions, laser ablation, nanoscale heattransport, plasmonics or strongly driven phase transitions. In my group such dynamic processes are studied within the collaborative research center SFB 616 "Energy Dissipation at Surfaces". I will present examples for the ultrafast electron dynamics in nano structures or layers of organic

semiconductors upon fs-laser excitation by means of fs-time resolved photo electron emission microscopy (PEEM). The excitation, propagation, interference and dissipation of surface plasmon polariton waves in selforganised Ag-nanostructures is lively imaged with sub-fs temporal resolution in the PEEM. The dynamics of structural changes at surfaces upon excitation with a fs-laser pulse is studied on the ps-time scale by time resolved electron diffraction in reflection geometry (RHEED). With this technique strongly driven phase transitions in adsorbate systems on Si surfaces could be studied far away from equilibrium. Utilizing the Debye Waller effect the cooling of vibrational excitations in adsorbate systems or the nanoscale heat transport through a heterofilm interface is observed on the ps-time scale.