

O 50: Overview Talk: Ulrich Höfer

Time: Wednesday 9:30–10:15

Location: S054

Invited Talk

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Shedding light on internal interfaces — ●ULRICH HÖFER —
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Electron spectroscopies and scanning probe microscopies have been decisive in bringing surface science to today's high level of understanding. In modern materials science, buried internal interfaces between two solids have become increasingly important. For their investigation, photon-based experimental techniques play a key role.

In this talk, I will discuss perspectives and challenges of the research on internal interfaces and present results obtained for different model systems. For the lattice-matched polar/nonpolar semiconductor interface GaP/Si(001), atomically resolved structural data are available

from transmission electron microscopy (TEM). Time-resolved optical second-harmonic generation (SHG) and coherent phonon spectroscopy provide rich information about the dynamics of charge carrier transfer, electric fields and electron-lattice excitations at this interface. Many organic semiconductors can be grown on single crystal metal substrates to form well-defined, atomically abrupt interfaces. Buried only below a few monolayers, these interfaces can be accessed by two-photon photoemission (2PPE). It will be shown that interfaces-specific electronic states are formed for a wide class of such systems. Located between the metallic Fermi level and the molecular LUMO, they efficiently mediate the charge transfer at organic/metal contacts.

Work performed in the framework of the Collaborative Research Centre "Structure and dynamics of internal interfaces" (SFB 1083).