

Structure and Dynamics of Internal Interfaces

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Buried internal interfaces between two solids play an increasingly important role in modern materials science. The microscopic understanding of chemical bonding, electronic structure and energy transfer processes at such interfaces, however, is lagging behind that of volume or surface properties. In a new Collaborative Research Centre, scientists in Marburg, Germany and San Sebastián, Spain aim to close this knowledge gap. They develop and investigate model systems of different classes of hetero-interfaces by combining expertise in the fields of chemical synthesis, solid state physics, structural analysis and laser spectroscopy.

In this talk, I will briefly introduce the new center and discuss preliminary work of my own group. In the first example, I will show that a characteristic phonon mode exists at the lattice-matched polar/nonpolar semiconductor interface GaP/Si. In the second example, I will address the dynamical properties of interfacial electronic states between metals and organic semiconductors.