



Photoelectron spectroscopy: a powerful tool to probe novel semiconducting materials

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■ Research on novel semiconducting materials for application in optoelectronic devices like solar cells or light emitting devices has gained increasing interest in the last years as these technologies have several advantages over the standard silicon applications; these include e.g. the processability from solution or the application in flexible devices. In this talk I want to look at two of these material classes, which are the rather well established organic semiconductors as well as the recently revived organic/inorganic halide perovskites.

The properties of these novel semiconductors are rather different from their inorganic counterparts, and drawbacks in physical properties are compensated by advanced design principles when applied in optoelectronic devices. In the resulting complex multilayer structures, the working mechanisms depend crucially on the proper alignment of the electronic landscape within the device, allowing for efficient charge injection or extraction across the various interfaces.

In this talk, I will introduce photoelectron spectroscopy as a powerful tool to investigate these novel semiconductors. These measurements enable us to probe the basic properties of these materials as well as their interface formation and help us to unravel and improve their working mechanisms in devices.