Surface science studies of organic semiconductors:
From monolayers to device relevant thicknesses

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The surface and interface group of the Institute of Physics, Karl-Franzens University Graz, has been involved in problems of surface physics and chemistry of organic adsorbate systems for more than 25 years. For over 15 years we have been studying the interfaces and films of oligomeric systems as models for the so-called organic semiconductors. In the last decade we bridged the gap from molecular monolayers to device relevant film thicknesses up to 100 nanometers. Our recent work has focused around three areas: 1) The study of all interfaces relevant to organic devices [1, 2], 2) Growth of homo- and heteroepitaxial crystalline organic films [3, 4], and 3) The electronic band structure of crystalline organic films[5].

Our group has 11 ultra high vacuum chamber, all equipped with standard facilities for sample preparation and characterisation. In addition every system is devoted to one particular technique, which include: (angle resolved) valence band photoemission, X-ray photoemission spectroscopy (XPS), Photoemission microscope (PEEM), (Low temperature, variable temperature and room temperature) scanning tunnelling microscopes (STM), atomic force microscope (AFM), low energy electron diffraction (LEED) and High resolution energy electron loss spectroscopy (HREELS). These techniques allow to determine the electronic structure (both valence band and core levels), the geometric structure, morphology and the vibronic structure of our molecular films.

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