

# Degradation of organic thin films by UV/VIS irradiation investigated by UPS and XPS

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## Abstract:

Due to their low production costs, low-priced starting materials, and mechanical flexibility, organic photovoltaics (OPVs) represent an attractive alternative to the established solar cells with inorganic photoactive layers (e.g. Si). One disadvantage of organic components in photovoltaic devices is their comparably low stability against irradiation. The extensive study of degradation processes, their mechanisms, and their dependence on radiant exposure and wavelength is, therefore, prerequisite for the fabrication of stable OPVs in the future.

In the present contribution a study of degradation of organic thin films relevant for photovoltaic applications by the exposure of monochromatic and quantifiable synchrotron radiation in the spectral range from VUV to visible light is presented. The irradiation procedure at the insertion device beamline at PTB's own synchrotron radiation facility - the Metrology Light Source (MLS) - is explained. The characterization of organic thin films and the investigation of degradation effects were carried out by measurements of UV and X-ray photoelectron spectroscopy (UPS, XPS) before and after radiant exposure.

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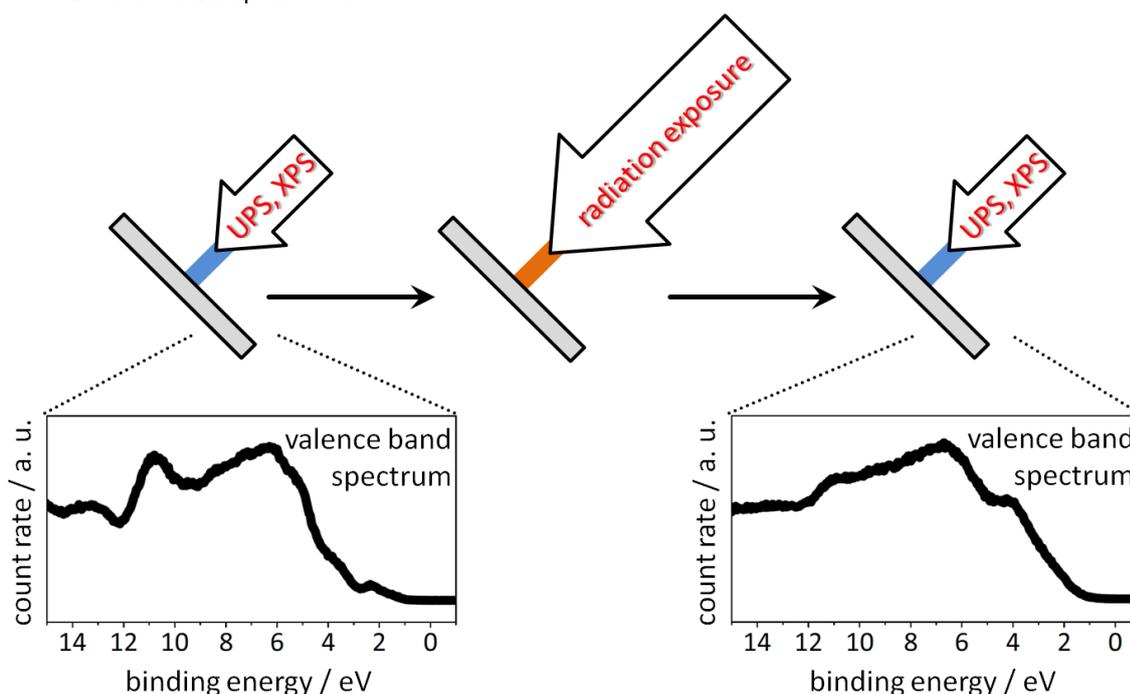


Figure 1: general irradiation procedure