XPD for characterisation of molecular switching on surfaces

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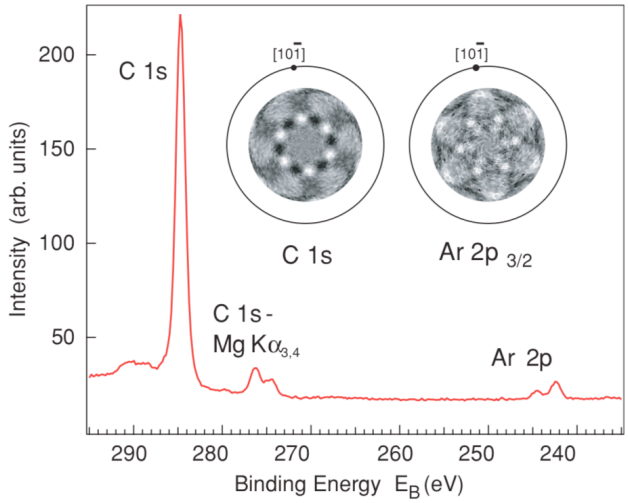
Angle scanned photoelectron diffraction (XPD) [1] is a versatile method to access molecular order at interfaces. I will review the potential of the method for the determination of the molecular conformation on surfaces [2]. For fullerenes the change of molecular conformation upon change of the charge state may be accessed straightforwardly [3-5]. For endofullerenes, the arrangement of the endohedral cluster with respect to the cage and to the surface may be directly inferred [6], where resonant excitation greatly enhances the signal [7]. If the excitation displays magnetic dichroism a direct link between conformation and magnetism may be established [8,9].



X-ray photoelectron spectroscopy (XPS) and corresponding angle-scanned X-ray photoelectron diffraction (XPD) pattern of Ar@C60. XPS indicates a film thickness of seven monolayers and a C:Ar stoichiometry of (63 ±2):1. The C 1s and Ar 2p XPD patterns show azimuthal ordering of the molecules, where the high anisotropy ratio between Ar 2p and C 1s indicates that Ar sits inside the carbon cages. From [6].

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