FOXSI
Functional Oxide Surfaces and Interfaces

EINLADUNG

zum Vortrag
von

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Medium energy electron diffraction by Auger and elastically backscattered electrons: experiment and theory

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Mittwoch, 04. April 2012, um 16:30

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Abstract:

The anisotropic scattering of electrons in solids is commonly used to obtain information about the short range order within the first few atomic layers of crystalline samples. In X-ray photoelectron diffraction (XPD) the forward scattering of emitted photoelectrons leads to signal enhancements recorded along the close-packed crystalline directions. With the use of this experimental method a straightforward identification of the crystalline order of metal–metal as well as molecular–metal adsorption geometries is possible. It appears that also the primary electrons which strike crystalline samples undergo strong scattering events. In directional elastic peak electron spectroscopy (DEPES) the diffraction processes of primary electrons can be used to reveal the crystalline structure of the investigated systems. In this experimental method the intensity of elastically backscattered electrons is measured as a function of the incidence angle of the primary electron beam at energies in the range of 0.5–2.0 keV. The distribution of the maxima observed in the DEPES profiles leads to a straightforward identification of the crystalline structure not only of the uppermost layer, but also of first few atomic layers. Similarly, the scattering of the Auger electrons might be used to reveal the surface structure, the corresponding method is called DAES (directional Auger electron spectroscopy). Several examples of the DEPES and DAES application will be shown.

FWF SFB F45 „Functional Oxide Surfaces and Interfaces (FOXSI)“
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