
X-ray Diffraction Using Grazing Incidence Techniques: Characterisation of Surfaces and Thin Films

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Abstract

X-ray scattering techniques are widely used to characterise the structural properties of organic materials in terms of their crystalline and morphological features like type of phase, molecular packing, preferred orientation of molecules, crystallinity, etc. In case of organic thin films specific experimental techniques are required. The tutorial talk will introduce x-ray scattering techniques using grazing incidence conditions of the primary beam, namely x-ray reflectivity and grazing incidence x-ray scattering. The fundamental principle of these two methods will be discussed in terms of the optical properties of x-rays, a short comparison to analogous techniques using neutron beams will be drawn. The experimental possibilities of these methods will be introduced on basis of thin films of the molecule dioctyl-terthiophene. Special emphasis will be drawn on the interface properties of organic films in terms of surface and interface roughness and on the molecular order at surfaces.

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