

13. DIFFRACTION METHODS

13.1 Introduction

Diffraction methods are used for the identification and also for the quantification of constituents of crystalline structures. Diffraction patterns are obtained with an object with crystalline structure is irradiated by X-ray photons, or by other particles (electrons, neutrons, etc.).

The basic principle of diffraction methods is based on the *Bragg equation*, which defines the relation between the wavelength of the radiation, the angle of the incident radiation and the crystal lattice geometry of the object irradiated.

13.2 X-ray diffraction

X-ray diffraction techniques used for surface analysis are presented in Section 17.3.

13.3 Electron diffraction

Electron diffraction based analytical techniques used in surface analysis are introduced in Sections 17.2.1.6 and 17.3.

13.4 Neutron diffraction

Neutron diffraction techniques for investigating adsorbed molecules are covered in section 17.7.6.

13.5 References

For a discussion of crystallographic nomenclature the International Tables for Crystallography Vol.A. (Edited by International Union of Crystallography, Kluwer Academic Publishers, Dordrecht, 1992) may be consulted.