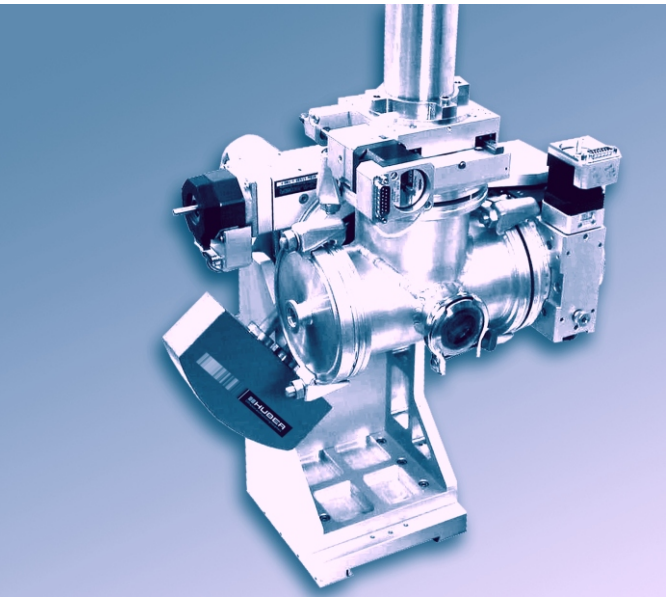
HUBER
Diffraction and Positioning Equipment



General

The three axis HUBER in-vacuum polarisation analyser has been designed to facilitate the study of changes in the polarisation of the x-ray beam after diffraction from the sample.

The in-vacuum design allows the device to be used at low energies (ca. 3kev).

Technical details

The polarisation analyzer comes with a T-shaped vacuum chamber, clamped on a CF vacuum flange with a support for the crystal holder. The top flange with a pumping connection can be removed in order to get access to the analyser crystal.

On the 2θ linear translation, which seals the chamber with a Kapton window, a detector with a max. diameter of 48mm with shielding can be mounted. The linear range is +/- 20mm which corresponds to 2θ = +/- 7°.

Optionally a further detector can be mounted in direction of the scattered beam on the back side of the support of the of the σ/π-axis (Huber model 410a) and can be used windowless or with Kapton window in vacuum for measurements without analyzer crystal.

The whole assembly is mounted on a prism slide (or optional other slides) to be fitted on the 2θ arm of a diffractometer.

Specification

Ranges [°]:	
θ (model 409) [°]:	+/-5
2-θ (linear translation at 90° fixed angle [°]:	+/-7
π/σ (model 410a) [°]:	+/-180
	ca. +/-110 (with detector mounted)
Resolution [°]: (depending on application and motorisation)	0,005 to 0,0001

Vacuum chamber with 2 ports for the direct beam with DN40KF flanges

One port for vacuum pumping

Mounting flange for analyzer Crystal

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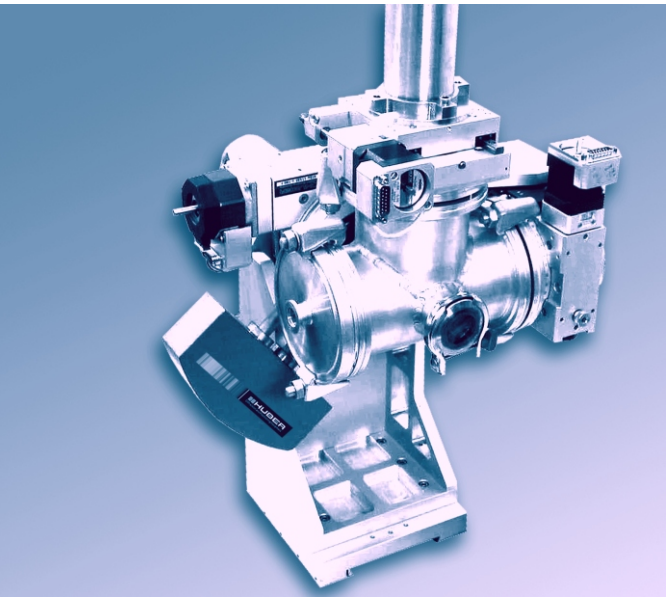

Applications

The Θ-axis (Huber model 409) allows alignment of the analyser crystal to a diffracting condition, with Θ Bragg at, or close to, 45°. The second rotation axis (Huber model 410a) allows rotation of the diffracting plane of the analyser crystal about the beam.

Any component of the incident polarisation lying in the diffracting plane will go to zero on charge scattering for Θ Bragg = 45°. The third linear axis allows translation of the detector in a 2Theta geometry in order to track the diffracted beam.

Conventionally, for vertical scattering experiments, the incident polarisation is referred to as σ polarised and any component orthogonal to it (i.e. vertically polarised) as π polarised. Thus, by positioning the rotation about the beam such that the diffracting plane of the analysing crystal is vertical, one is sensitive only to the σ polarised component and conversely a horizontal analyser crystal diffraction plane measures the π component.

Any additional components of polarisation introduced on diffraction from the sample, due to its magnetism, may therefore be quantified.