

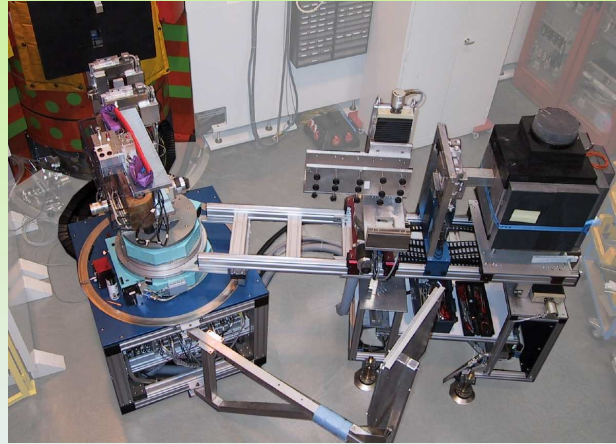
MORPHEUS — a modular two-axes diffractometer

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MORPHEUS (previously known as TOPSI) is a multi-purpose instrument for test experiments. In the basic set-up it is a two-axes diffractometer with the opportunity to insert or add modules in between monochromator and sample position, on the sample table, and at the 2θ -drive.

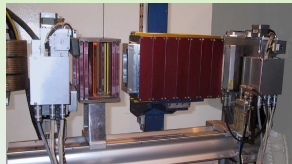
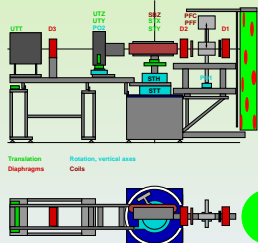
Basic Features and Technical Specification

monochromators	graphite (002) & (004) Si (111), etc.
wavelength-range	$2.3 \text{ \AA} < \lambda < 6 \text{ \AA}$
flux maximum	$\approx 4 \text{ \AA}$
scattering plane	horizontal
2θ -range	up to 130°
intensity (4.74 \AA)	$2 \cdot 10^4 \text{ s}^{-1} \text{ cm}^{-2}$



Polarised Reflectometry

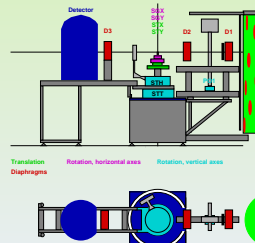
dynamic range	10^5 to 10^6
polarisation	transmission supermirror polariser Mezei-type spin flipper
sample magnet	vertical or horizontal, 15 cm gap, 50 cm long, $-1000 \text{ Oe} < B_z < 1000 \text{ Oe}$
analysis option	remnant switchable transmission polariser multi reflection set-up (unpolarised)



first and second diaphragms with polariser magnet and spin flipper

Diffraction

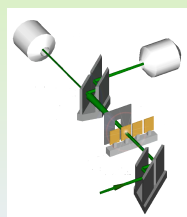
q -range	$0.2 \text{ \AA}^{-1} < q = 4\pi/2d < 5.4 \text{ \AA}^{-1}$
options	4-circle diffractometer (with Euler cradle) x and y translation and tilting (see sketch)
environment	standard SINQ-equipment e.g. CTI, APD



Ultra Small Angle Neutron Scattering

A Bense-Hard camera now is a permanent option

q -range	$2.5 \times 10^{-5} \text{ \AA}^{-1} < q < 3 \times 10^{-3} \text{ \AA}^{-1}$
resolution	0.6 \mu m to 25 \mu m
peak intensity	$600 \text{ s}^{-1} \text{ cm}^{-2}$
peak to background	3.5×10^3



Exotic Tests

E.g.
a prototype analyser- and detector-segment for the new backscattering instrument MARS (SINQ) was tested upside down



Measuring time on TOPSI is not accessible via the normal allocation scheme. Please ask Jochen Stahn for details.