



SWAXS module for Xeuss 2.0 SAXS/WAXS system

The SWAXS option is a new feature that extends the capability of the Xeuss 2.0 SAXS / WAXS system to real time simultaneous SAXS / WAXS data acquisition. Based on an exclusive collaboration with Dectris, it features a vacuum compatible hybrid pixel detector. The SWAXS option has been designed to take full benefit from the modularity of the Xeuss 2.0 system enabling in-line data acquisition of scattered angles up to 2θ of 60° . With the combination of two hybrid pixel detectors for small angle and wide angle measurements, SAXS and WAXS data can be collected simultaneously. Data can be acquired for a large range of samples under different experimental conditions like controlled temperature, stress, etc. Access to real time data is a unique performance feature allowing dynamic measurements and fast phase transition analysis. This option is provided with dedicated software for SAXS and WAXS data recombination.

Principal Features

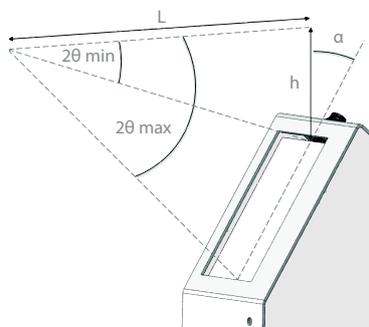
- Simultaneous SAXS and WAXS measurements
- High angular resolution
- Noise free detector
- PSF < 1 pixel
- High frame rate
- SAXS and WAXS data recombination

Benefits

- Simultaneous measurements of structure from 0.1 nm up to 250 nm
- Dynamic measurement possible with Hybrid pixel detector for both SAXS and WAXS

Applications

- Phase transition
- Dynamic measurements under various conditions (temperature, stress...)



Angular range (typical)

L, h, α	$2\theta_{min}$	$2\theta_{max}$
168 mm, 50.5 mm, 36°	16.7° (11.8 nm^{-1})	45° (31.2 nm^{-1})
Pixel resolution	$\Delta 2\theta = 0.056^\circ$ ($\Delta q = 0.040 \text{ nm}^{-1}$)	$\Delta 2\theta = 0.059^\circ$ ($\Delta q = 0.042 \text{ nm}^{-1}$)

Larger 2θ angles up to 60° possible with change of sample position.

Detector Specifications

Sensor thickness	320 μm
Quantum efficiency	8 keV : 95% - 15 keV : 51%
Pixel size	$172 \times 172 \mu\text{m}^2$
Sensor size	$83.8 \times 33.5 \text{ mm}^2$
Format	$487 \times 195 = 94\,365$ pixels
Dynamic range	20 bits = 1 048 576
Counting rate per pixel	$> 2 \times 10^6$ ph/s
Energy range	4.5 - 36 keV
Energy resolution	500 eV
Adjustable threshold range	4 - 18 keV
Threshold dispersion	50 eV
Readout time	7 ms
Framing rate	20 Hz
Point-spread function	1 pixel
Weight	2 kg
Dimension	$100 \times 60 \times 200 \text{ mm}$
Other	Dry air or vacuum operation