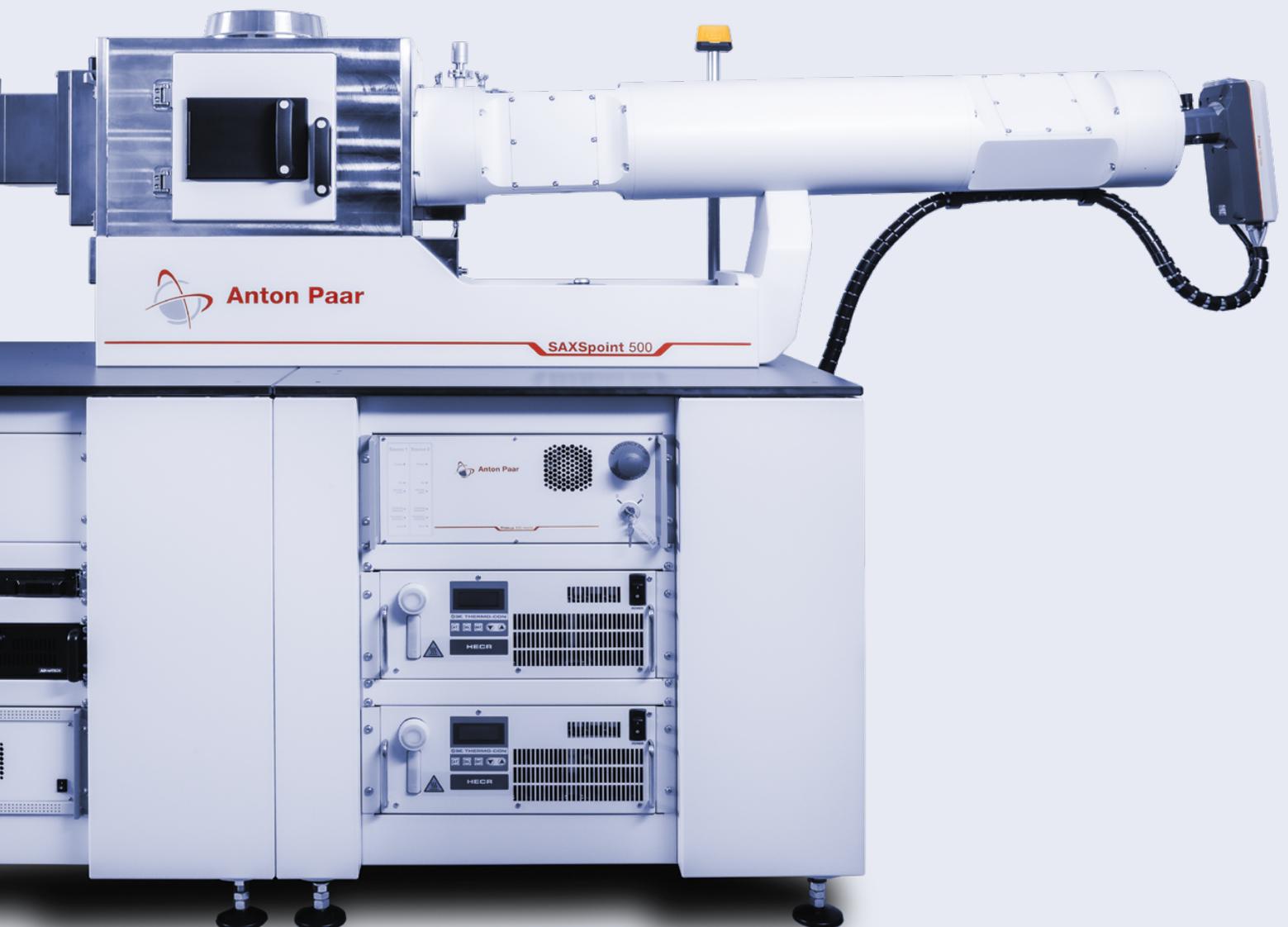


# Pure Brilliance: SAXS for Routine Applications

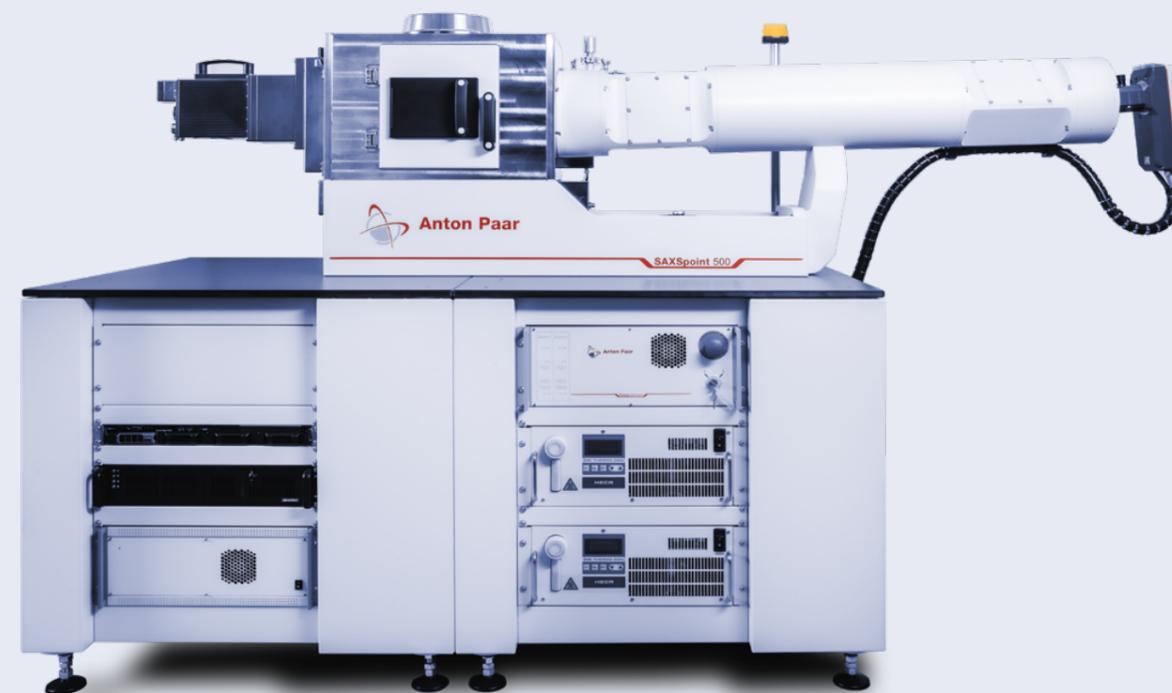
SAXSpoint 500



# SAXSpoint 500: Pure Brilliance at the Best Price



Take on routine samples with the help of the best-in-class beam delivery system. Thanks to an X-ray beam with the highest spectral purity (>99.9 % Cu K $\alpha$ ) and scatterless beam collimation, users are guaranteed synchrotron-like data quality (including SAXS/WAXS/GISAXS) with minimum experimental effort and within the shortest exposure times. This SAXS system, with its brilliant setup and industry-leading optical system, enables the resolution of structures up to 300 nm (d-spacing), at the most compact system size (2.7 m x 0.9 m).



## Flexibility for your experiments

Customize your system to tackle various samples with a wide range of stages tailored for SAXS applications. Analyze almost any nanostructured material, and switch between different sample stages seamlessly with automatically aligned components. The range of stages includes the TCStage for temperature-controlled analysis and the GISAXS stage for grazing-incident analysis, among others.

## Accelerate your processes with automation

Minimize human error during complex SAXS experiments. With SAXSpoint 500, you can fully automate routine tasks to accelerate your measurement processes, and align all X-ray components and sample stages using SAXSdrive software.

Automate your sample throughput with the autosampler for up to 192 samples. The temperature-controlled well plate compartment ensures sample integrity during storage.

## Powerful software

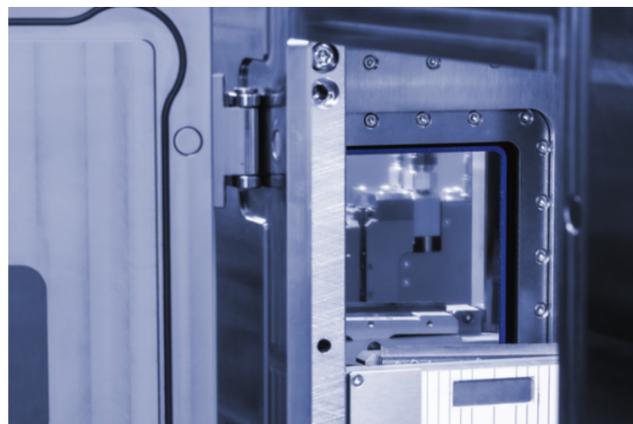
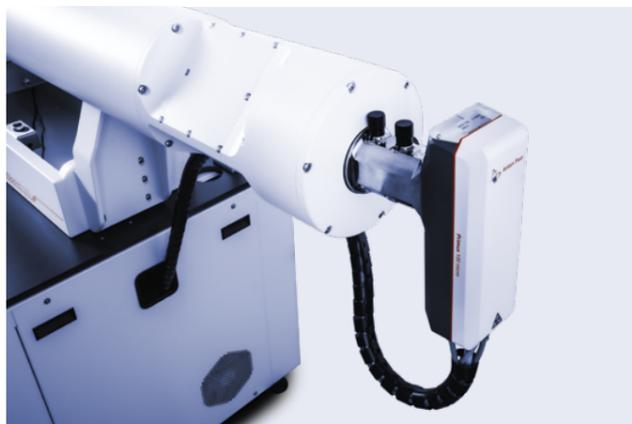
The intuitive SAXSdrive and SAXSanalysis software integrate automated routines like temperature scans and time-dependent studies, letting you focus on more important tasks.

Analyze your data using customizable templates, and determine parameters like radius of gyration ( $R_g$ ), particle size, and specific surface. Export data to all relevant formats for further analysis. SAXSanalysis ensures that you meet industry standards and norms, such as ISO 20804.

## Support when you need it

Get the most out of your investment with Anton Paar's standard three-year warranty. Benefit from a global support network, guaranteeing maximum uptime. With subsidiaries across the globe, expert advice and on-site support are never far away.

## Sources and Detectors



### Powerful X-ray source

Primux 100 micro from Anton Paar is a brilliant, maintenance-free microfocus X-ray source, combined with advanced ASTIX optics by AXO Dresden to deliver outstanding X-ray flux and exceptional spectral purity. It is available with Cu and Mo target materials, with other materials available on request.

### Synchrotron detector technology in a lab-scale instrument

SAXSpoint 500 comes with the latest detector technology from Dectris, integrating high-resolution EIGER2 R or PILATUS4 R series detectors with hybrid photon-counting (HPC) technology, and supporting windowless operation (EIGER2 only) for beamstop-less measurements.



## Structural Investigations at the Nanometer Scale



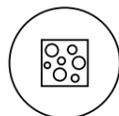
### Size

Obtain the size and size distribution of your sample.



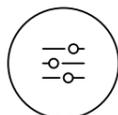
### Shape

Learn about the shape of biological nanostructures (e.g., in protein research).



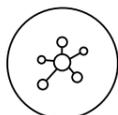
### Specific surface area and porosity

Measure the specific surface area of your sample and obtain information on its porosity in a single measurement.



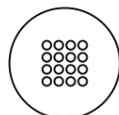
### Orientation

Monitor changes in nanostructure orientation of your sample while applying an external force (e.g., shear).



### Internal structure

Obtain information on the internal structure of systems such as core-shell particles, including lipid nanoparticles (LNPs) loaded with mRNA.



### Crystallinity

Analyze the order of your nanostructure on the mesoscopic scale.

### Pharma

#### SAXS study of mRNA-LNP vaccines<sup>1</sup>

Lipid nanoparticles (LNPs) are widely used as carriers for pharmaceuticals. In the case of mRNA vaccines, the LNP nanostructure (size, composition) directly impacts both efficacy and stability. SAXS enables the analysis of mRNA-LNP samples in solution, preserving their native state. For example, SAXS can be used to monitor vaccine stability under external influences (e.g., aging, pH, temperature stability) by evaluating the size distribution.

### Quality control

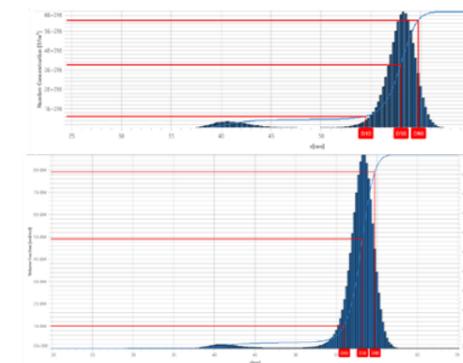
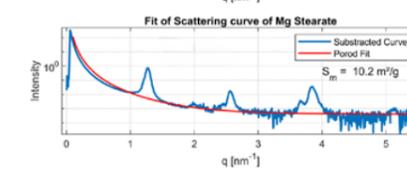
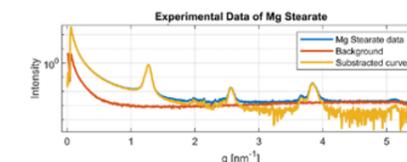
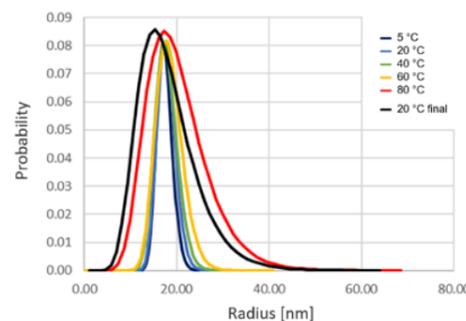
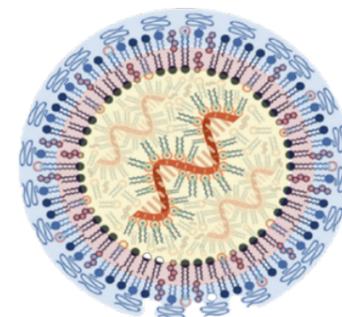
#### Assessment of the specific surface area of Mg stearate

Mg stearate is a sample used in the pharmaceutical industry as a lubricant in tablet and capsule manufacturing. The measurement of its specific surface area is an important quality control parameter. SAXS offers a fast, highly reproducible alternative to traditional sorption-based methods for this analysis.

### Material science

#### SAXS study of SiO<sub>2</sub> nanoparticle solution

Silicon dioxide (SiO<sub>2</sub>) nanoparticles have a wide range of applications, including in fields such as energy, biomedicine, and catalysis. Their size directly relates to efficiency and functionality, so having accurate control over both nanoparticle size and concentration is a key metric. SAXS enables exceptionally accurate measurement of both properties in a single experiment.



<sup>1</sup> Buschmann, M.D. et al., *Vaccines* 2021, 9, 65

# Choose Your Stages

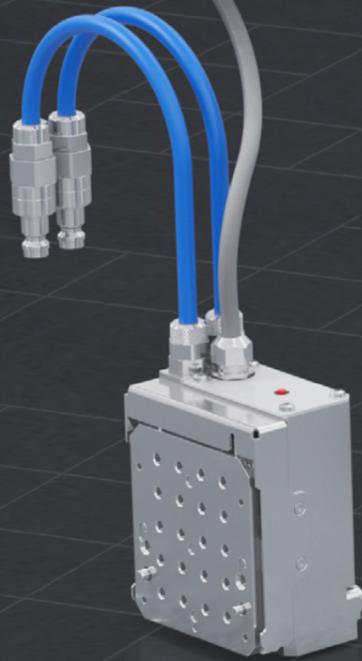
One System for All Your Needs

## High-quality, high-precision sample stages

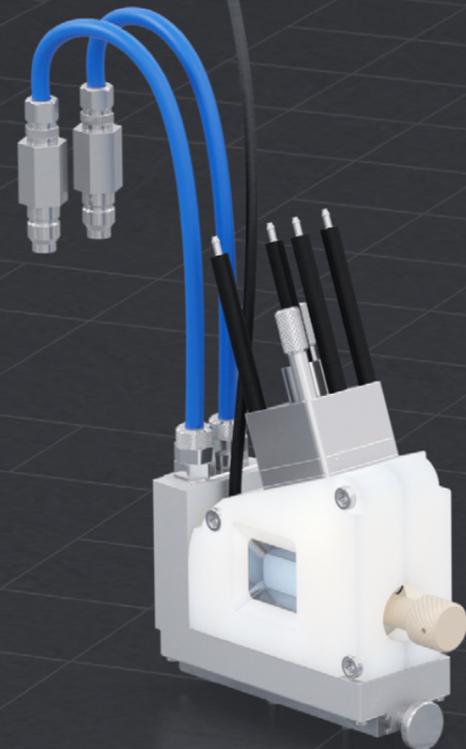
Choose from high-quality and high-precision off-the-shelf sample stages and holders for almost every type of sample material. All stages are fully integrated in the software and hardware, automatically recognized, and configured for the setup.

## Flexibility

Set up your experiment to suit your research and obtain excellent insights into your sample under ambient or non-ambient conditions. Contact us so we can design and implement customized sample environments or combinations with other instruments and complementary methods.



**Temperature-controlled autosamplers for multiple samples**  
Automated sampling/mapping of multiple samples



**Humidity Stage**  
Experiments at different humidity levels in both transmission and reflection geometry (GISAXS)



**Battery Cell**  
Electrochemical/battery cell for operando scattering studies of energy storage or conversion materials



**GISAXS Stage 2.0**  
Grazing-incidence, small- and wide-angle X-ray scattering (GISAXS/GIWAXS) studies

# Dedicated Software for the Best SAXS/WAXS/GISAXS Results

If you process and analyze a large amount of scattering data, you need optimized and powerful software. With SAXSdrive and SAXSanalysis, you can easily set up automated serial measurements, including integrated sampling and temperature control. Automated data processing supports a range of evaluation possibilities.

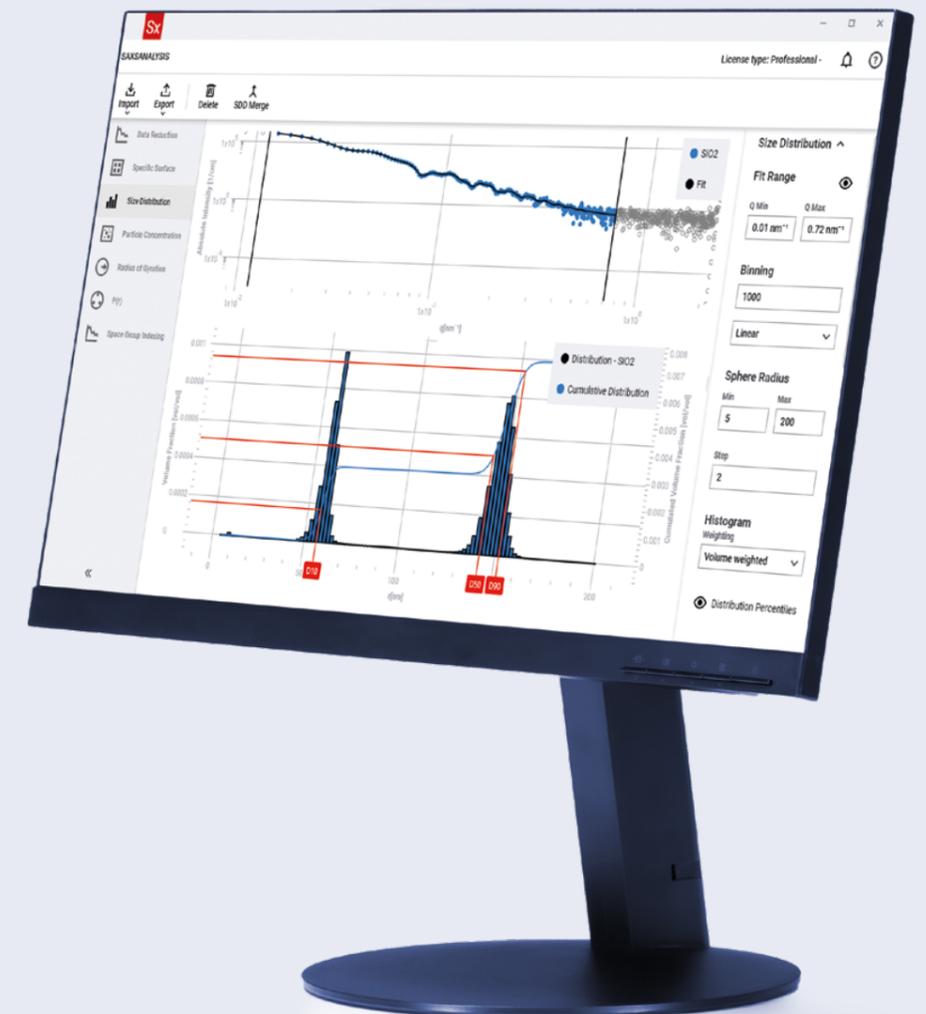
## System control and data acquisition

Use SAXSdrive to control all system components. It allows you to easily program and run automated SAXS/WAXS/GISAXS/RheoSAXS experiments. Design your own experiments using the Python scripting interface.

## Data processing and analysis

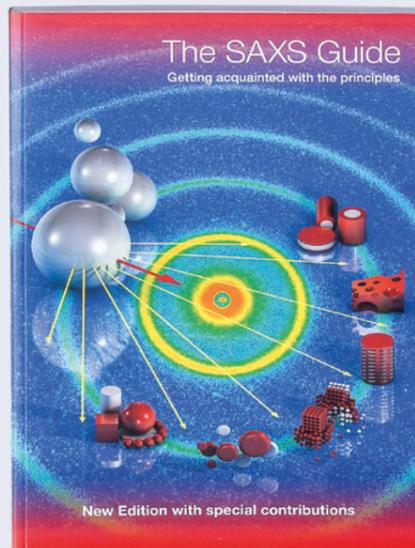
Use SAXSanalysis, a comprehensive data reduction and analysis package for 2D and 1D scattering data. Benefit from automatic processing to obtain your results quickly, even from a large amount of scattering data. The data layout follows the commonly used Nexus convention.

- Receive scattering data in absolute units fully automatically without the need to measure a reference sample
- Determine important parameters and obtain information on the particle size and size distribution, the specific surface area, the pair-distance distribution function  $(P(r))$ , and more, with just a few clicks
- Free yourself from manual file conversions with automatic data export routines to common model-fitting (SasView, ATSAS, McSAS, Sasfit, BornAgain, etc.) and IFT packages



# We Support You

**We don't just sell you a SAXS instrument: Your purchase is the start of a partnership with Anton Paar which lasts for the entire lifetime of the product. Anton Paar has more than 65 years of expert knowledge in the field of SAXS. Rely on a worldwide network of application and service specialists. Our experts are here for you!**



Get your free copy

SAXSpoint 500	
<b>X-ray source</b>	Primux 100 micro microfocus X-ray source (Cu, Mo, other target materials on request)
<b>X-ray optics and collimation</b>	<ul style="list-style-type: none"> <li>- Custom-designed AXO ASTIX/ASTIX++ optics (fully evacuated)</li> <li>- Automated scatterless beam collimation (fully evacuated)</li> </ul>
<b>Sample stages and autosamplers</b>	<ul style="list-style-type: none"> <li>- GISAXS stage with heating/cooling option (-150 °C to +500 °C)</li> <li>- Temperature-controlled autosamplers for multiple samples (-150 °C to +350 °C)</li> <li>- ASX autosamplers for up to 192 liquid samples</li> <li>- Battery Cell</li> <li>- Humidity Stage</li> <li>- Shear Cell</li> <li>- Customized solutions available on request</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>- TrueFocus: Automatic self-alignment</li> <li>- TrueSWAXS: Continuous and simultaneous SWAXS studies</li> <li>- Stagemaster: XYZ stage with auto-recognition of sample stages</li> <li>- Optional high-performance optics providing an X-ray flux of <math>&gt;6 \times 10^8</math> ph/s</li> </ul>
<b>Temperature range</b>	-150 °C to +500 °C
<b>Temperature accuracy</b>	$\pm 0.1$ °C
<b>Atmosphere</b>	Vacuum, inert gas, (reactive gases on request)
<b>Sample holders</b>	<ul style="list-style-type: none"> <li>- Quartz capillary for liquids</li> <li>- Low-parasitics SiN cell</li> <li>- Sample holder for solids</li> <li>- PasteCell for viscous and powder samples</li> <li>- RotorCell for sample spinning</li> <li>- <math>\mu</math>-Cell for small sample volumes</li> <li>- FlowCell and TubeCell for automation</li> <li>- Holders for multiple samples</li> <li>- Multicuvette holder</li> <li>- UV-Vis cell</li> <li>- Customized solutions available on request. Please contact us.</li> </ul>
<b>Detectors</b>	2D EIGER2 R and PILATUS4 R series HPC detectors
<b>Accessible q-range</b>	0.025 nm <sup>-1</sup> to 43 nm <sup>-1</sup> (no extension) <0.020 nm <sup>-1</sup> to 43 nm <sup>-1</sup> (with extensions)
<b>Software</b>	<ul style="list-style-type: none"> <li>- SAXSdrive measurement and acquisition software</li> <li>- SAXSanalysis data processing and analysis software</li> </ul>
<b>Footprint</b>	2.7 m x 0.9 m (L x W)

Trademarks: SAXSdrive (013414561, UK00913414561), SAXSpoint (014036024)

## Reliable. Compliant. Qualified.



**Our well-trained and certified technicians are ready to keep your instrument running smoothly.**

Maximum uptime | Warranty program | Short response times | Global service network

