



Xeuss 2.0^x

The SAXS/WAXS laboratory beamline

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A step forward into high performance SAXS/WAXS measurements in the lab

For many years, high performance SAXS measurements were limited to synchrotrons, as only such large facilities were able to simultaneously achieve the following four key parameters:



1.

High brilliance

An intense and collimated beam with precise control of divergence, to avoid smearing effects and enable the study of oriented structures.

2.

Low parasitic scattering

A beamline designed to minimize parasitic scattering. By producing a high signal-to-noise ratio, measurement of low intensity scattered signals over a large q range, including on highly diluted systems, is made possible.

3.

High resolution

A long sample-to-detector distance to achieve very low q_{\min} values together with high angular resolution.

4.

Versatility

High system versatility and ergonomics to adapt to a variety of experimental constraints.

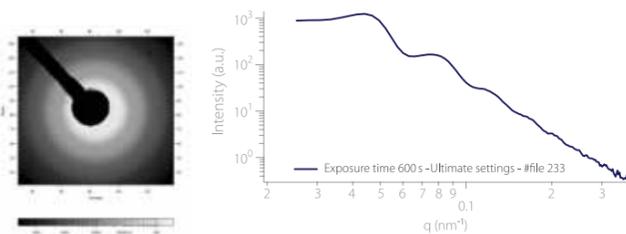
With the introduction of the Xeuss a few years ago, Xenocs made these four key parameters available to the home lab, opening the way to new SAXS/WAXS measurement capabilities.

With enhanced performance and ergonomics, Xenocs is going a step further and is pleased to introduce a new generation of SAXS/WAXS system: Xeuss 2.0.



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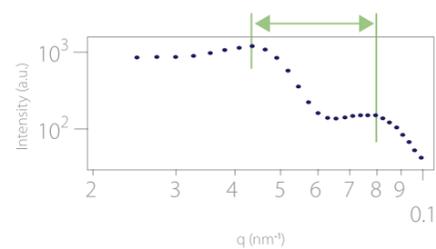
Ultimate Performance



SAXS measurement of SiO_2 powder (\varnothing 150 nm) taken with the Xeuss 2.0. Left: 2D pattern. Right 1D scattering curve.

q_{\min}

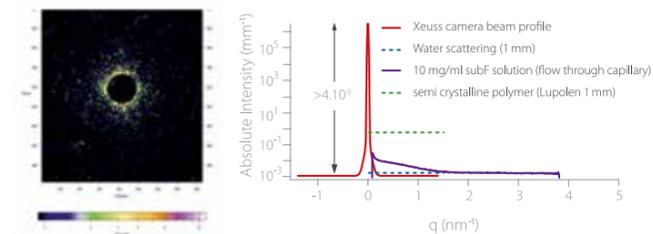
The highly collimated clean beam produced by the Xeuss 2.0 enables you to reach q_{\min} values down to 0.025 nm^{-1} in the standard configuration and even below 0.01 nm^{-1} in the ultimate configuration.



Inset in low q part of the 1D scattering curve from SiO_2 powder (\varnothing 150 nm) taken with the Xeuss 2.0.

Δq

The long sample-to-detector distance in the Xeuss 2.0 enables a pixel resolution down to 0.003 nm^{-1} in the standard configuration and even below 0.001 nm^{-1} in the ultimate configuration.



Ultra low background camera. Left: 2D pattern zoom of empty camera. (sample to detector distance 2.5 m, exposure time 600 s). Right: reconstruction of the Xeuss 2.0 beam profile with comparison of typical scattering levels.

Signal-to-noise ratio

The Xeuss 2.0 achieves a signal-to-noise ratio over 9 decades thanks to the combination of unique proprietary technologies. Accurate study of highly diluted systems, such as proteins in solution, is therefore possible in the lab.

“The unique performance of the Xeuss 2.0 is the result of more than 10 years of R&D in the company. The Xenocs proprietary single reflection optics together with our new generation of scatterless slits, generate a very intense X-ray beam with an ultra low level of parasitic signal. This opens the way to new possibilities of material investigation in the lab with just a 30 W microsource! From my experience as former SAXS beamline scientist at the ESRF, Xeuss 2.0 is certainly the most advanced system on the market for SAXS measurement in the lab.”

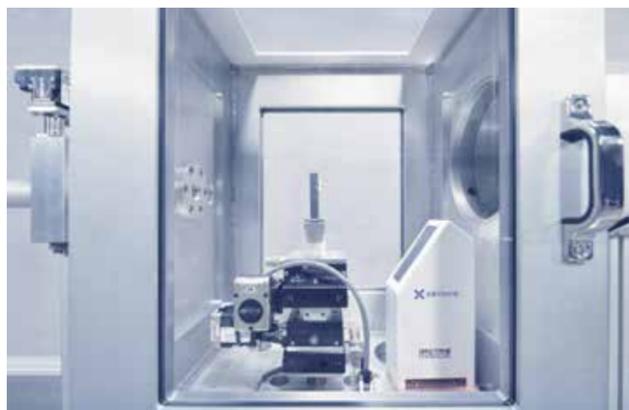


Dr. Pierre Panine
Senior Application Scientist and former Beamline scientist on ID02 SAXS beamline at the European Synchrotron Research Facilities (ESRF).

Xeuss 2.0^x

Maximum versatility and ergonomics

The unique design of the Xeuss 2.0 combines maximum versatility and ergonomics in order to meet your experimental needs.



1.

Open & versatile sample environment

The Xeuss 2.0 is equipped with a large sample chamber that can operate either in air or vacuum. A wide range of both proprietary and third party sample holders can be easily mounted on motorized sample stages for both transmission and GISAXS.



2.

Automatic change of resolution setting

The Xeuss 2.0 is equipped with a motorized beamstop and the new generation of Xenocs variable aperture scatterless slits. These components are fully controlled by software for automatic optimization of flux and resolution, depending on experimental conditions.

3.

Most advanced data collection capability on the market

Easy change of sample-to-detector distance

without beamstop realignment for best q range and azimuthal coverage settings.

Simultaneous SAXS/WAXS measurement up to 2θ 60°

with automatic recombination of SAXS & WAXS data. Xenocs SWAXS module was developed in collaboration with Dectris. It integrates the latest generation hybrid pixel technology for unmatched measurement capabilities.

Virtual detector mode

The Xeuss 2.0 is equipped with a unique motorized and entirely software controlled virtual detector mode. 2D images taken at different detector positions are automatically recombined in order to obtain the largest detection area on the market.

The Xeuss 2.0 integrates Pilatus 3 200K, 300K and 1M, the latest generation Pilatus detectors from Dectris.



4.

Full configurability and upgradability

The Xeuss 2.0 has been designed to be fully configurable and upgradable to meet the needs of any application.

Large range of standard sample holders.

- > Multicapillary holder - 13 slot multicapillary holder for batch measurements
- > Solid sample holder - for measurement of large solid objects
- > Multiple solid sample holder - 5 slot sample holder for viscous and powder materials
- > Thin film sample holder - for transmission and GISAXS
- > Flow cell with temperature control - for diluted systems
- > Spinning cell - for averaging microcrystalline domains
- > Fiber rotation mount - for alignment of highly oriented systems
- > Temperature stage - for temperature control of single and multiple samples
- > Tensile stage - for combined tensile and temperature controlled measurements
- > Humidity stage - for controlled humidity in situ measurements

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Xeuss 2.0 software solutions: powerful and user friendly

The unique performance of the Xeuss 2.0 is enhanced by a powerful and user friendly software package for system control, data acquisition and analysis.

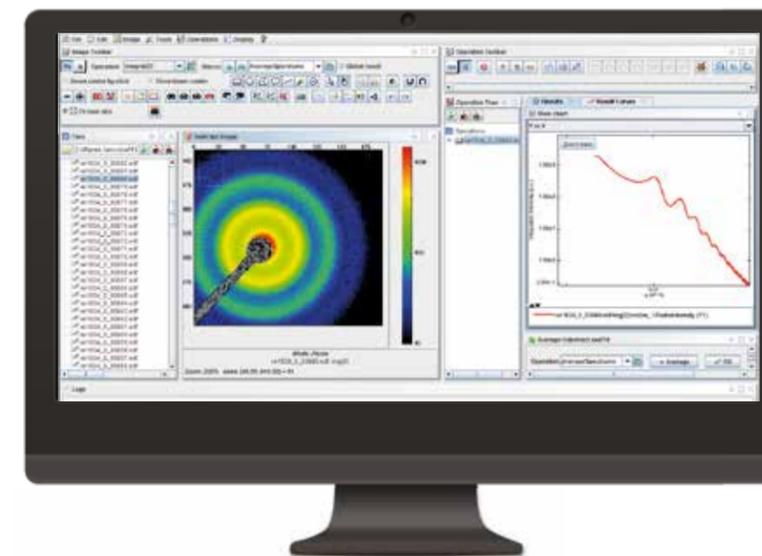


System control and data acquisition software

The Xeuss 2.0 control and data acquisition software features both easy to use graphical user interface and macro script mode for quick system access and advanced operations.

The software enables the complete monitoring of data acquisition parameters. Acquisition in single or batch mode can be controlled in just a few clicks. Auto alignment of the complete beamline, automatic change of collimation, sample stages, beamstop and detector settings are all available. Control of various sample environments is also possible.

With comprehensive features and advanced ergonomics, the Xeuss 2.0 system control and data acquisition software ensures maximum measurement throughput.



Data processing and analysis software

The data processing and analysis software for the Xeuss 2.0 enables an easy treatment of 2D and 1D data for both SAXS, WAXS and SWAXS, through its intuitive graphical user interface.

The software allows easy processing of single or large sets of 2D images, masking, subtracting and 1D integration in azimuthal or polar coordinates over the complete pattern or on a predefined region of interest.

Automatic recombination of 1D curves from SAXS and WAXS is made possible at the push of a button.

Preliminary structure parameters such as the radius of gyration are also included.

Data files can easily be exported to most advanced data analysis software packages such as SASfit or ATSA.

Xeuss 2.0 acquisition software is based on SPEC from Certified Scientific Software. SPEC is internationally recognized as the leading software for instrument control and data acquisition in X-ray diffraction experiments. It is used in more than 200 synchrotrons & labs around the globe.

Based on this powerful platform, we have developed a dedicated graphical user interface which enables easy access to most commands of the system in just a few clicks. With this interface, you can do advanced data acquisitions such as Virtual Detector mode or in situ measurements very easily.

The software is also very open and can control third party sample environments with most communication protocols such as USB, GPIB or RS-232.



Ronan Mahe
Product Manager

Xeuss 2.0 data processing and analysis software is the output of the exclusive partnership we have with Soleil synchrotron in France. It is based on Foxtrot – the Soleil software platform at the forefront of SAXS data processing in synchrotron environment.

Xeuss 2.0 software benefits from the large community of Foxtrot users, Foxtrot constant development and operation in intensive mode. The long-term development program we have set-up with Soleil ensures that the software will be continuously upgraded with new features.

Dr Sandra Desvergne
Application Scientist



Xeuss 2.0^x

Product & services

The Xeuss 2.0 best in class performance is not only based on its unique hardware and software features, but also on the expertise of the Xenocs team and their dedication to customer satisfaction.

System configurations

With a large choice of available lengths, source energy, detection type and optional sample environments, Xeuss 2.0 can be configured to best fit any application need.

System length
3 meters
5 meters
10 meters

Source energy
Cu K-α
Mo K-α
Cr K-α
Dual energy Mo/Cu/Cr

Detector type
PILATUS3 200K
PILATUS3 300K
PILATUS3 1M
SWAXS module

Optional sample stages
GISAXS
Temperature
Tensile
Humidity
Spinning
Rotation
Flow cell

Service

The Xeuss 2.0 is supported by a comprehensive service offer in order to help each customer realize the full potential of their Xeuss 2.0 during its complete lifetime.

Onsite installation and commissioning

Our team of engineers works in close collaboration with each customer and our local agents to ensure smooth installation and quick start of the system.

Operational training & scientific support

We take great pride in providing a comprehensive operational and scientific training program both onsite and online in order to fully train the customer on the SAXS technique and the Xeuss 2.0.

Customer support

A large choice of maintenance programs is available to allow maximum uptime of the system. Direct support from Xenocs engineers coupled with the regional support of our local agents enables us to provide a 24 hour response time.



Purchasing a SAXS system is a major decision for our customers which will effect their research activity for many years. We are therefore extremely careful to ensure their full satisfaction for the complete lifetime of the system.

Xenocs is recognized worldwide for the quality of its customer support. As an ISO9001 certified company we have developed a comprehensive customer support package. Our team of application scientists is available to our customers and works closely with them to make sure that they are able to realize the full potential of the system and the SAXS technique through onsite and online training programs. A close collaboration with our agents worldwide ensures local technical support with maximum reactivity.

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Customer Support Engineer

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