

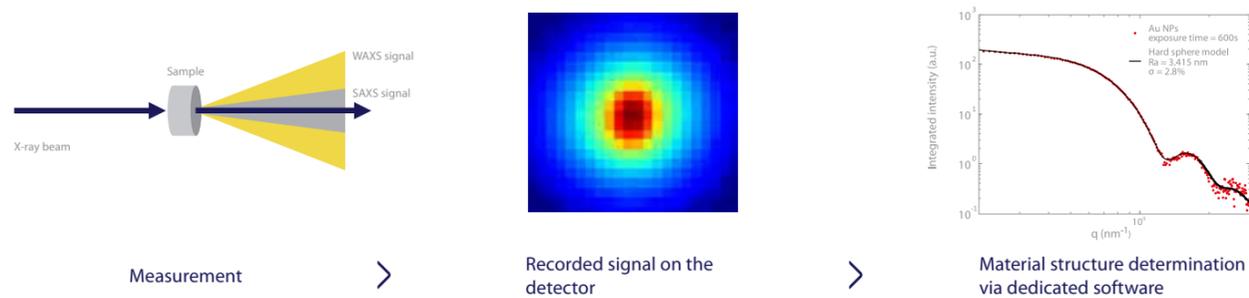


# Nano-inXider<sup>x</sup>

SAXS made easy

# Nano-inXider<sup>®</sup>

Your gateway to the SAXS/WAXS technique



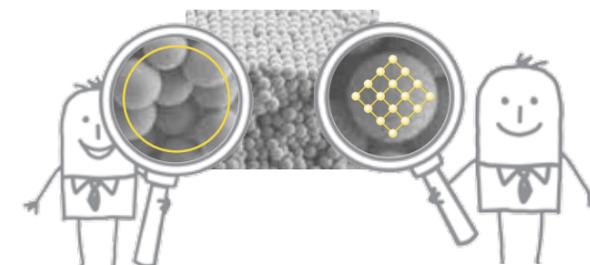
## 1. Principles

SAXS/WAXS, or Small and Wide Angle X-ray Scattering is a non-destructive technique that provides structural information on materials from few hundred nanometers down to the sub nanometer scale.

This technique uses the scattered X-rays from a sample at different angles to provide information about its structure at the nanoscale.

The collected scattered signal at very low angles (typically between 0.05 to 10 °) will give information on the structure of the material at a scale between 1 to few hundred nanometers, whereas the signal collected at wider angles (> 10 °) will provide information about the crystalline phase of the material.

With SAXS you can determine the size, size distribution, shape & surface-to-volume ratio of nanostructures up to few hundred nanometers



With WAXS you can get information on the crystalline phase of materials.

## 2. Advantages

Running a SAXS/WAXS experiment requires minimal sample preparation.

Measurements are easily performed on solids, liquids (even real processed objects or systems in native conditions such as proteins in solutions). *In situ* measurements of samples under variable conditions such as temperature or

tensile stress are no problem for the Nano-inXider.

The SAXS/WAXS technique will provide you with statistically relevant information about the probed volume of sample, making it an ideal complement to other techniques which provide only localized information (such as electron microscopy).

With the Nano-inXider you take full benefit from the SAXS/WAXS technique.

# Nano-inXider<sup>✕</sup>

## Your window to the most hidden face of materials

The Nano-inXider is a comprehensive solution for the characterization of nanomaterials. Benefiting from the unique technology developed by Xenocs through many years of experience, the Nano-inXider features unparalleled performance and ease of use in a compact package for simple integration into any lab environment.



1. Easy to use  
Large sample environment for easy access and sample manipulation. Automatic alignment and change of settings.
2. High performance  
Unique proprietary clean-beam-technology from Xenocs. Advanced in-vacuum hybrid pixel detection from Dectris.
3. Compact design  
All-in-vacuum vertical-beamline architecture. Smallest footprint on the market.
4. Adapted to your application  
A wide range of sample environments available.

SAXS/WAXS measurements have never been as easy as with the Nano-inXider.

*The Nano-inXider finds its roots in the unique clean beam technology developed by Xenocs over the years. Making this technology available in such a compact system represented a major challenge to our team.*

*But at the end of the day, the technology is not what matters, but what the system can offer to the user and how easy it is to operate.*

*We can proudly say that with the Nano-inXider we have been able to achieve a unique combination of performance, ergonomics, compactness and ease of use.*

**Blandine Lantz**  
Product Manager





# Nano-inXider<sup>x</sup>

## Comprehensive and easy to use software

The unique performance of the Nano-inXider is enhanced by a comprehensive and easy to use software suite for data acquisition, processing and analysis.



*The quality of data processing is a key step in the performance of a SAXS/WAXS measurement. Nano-inXider relies on advanced data processing algorithms that were developed in the synchrotron environment. Thanks to the beam architecture of the Nano-inXider, no desmearing post treatment is necessary, avoiding any loss of information and thereby providing more accurate data.*

*Predefined acquisition and data processing routines, easily controlled through the intuitive graphical user interface, help the user to easily access key information about their samples.*

**Dr. Manuel Fernández**

Application Scientist and former Post-doctoral researcher at ID02 SAXS beamline at the European Synchrotron Radiation Facility (ESRF)

### System control and data acquisition software

The Nano-inXider control and data acquisition software features an intuitive graphical user interface for ease of system operation.

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 system, automatic change of measurement settings and control of various sample environments are all available.

With comprehensive features and advanced ergonomics, the Nano-inXider control and data acquisition software ensures maximum measurement throughput.

### Data processing and analysis software

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

Through predefined treatment routines, this 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.

Preliminary structure parameters such as the radius of gyration can be determined.

The Nano-inXider software suite is designed for smart interfacing with the most advanced data analysis software packages such as SASfit and ATSAS through generation of fully compatible output data files.

# Nano-inXider<sup>®</sup>

## The right solution for your application

The Nano-inXider brings new characterization capabilities in the lab, opening new perspectives in many research fields.



With the Nano-inXider you can look at:



Consumer care & Food science

surfactants, colloidal dispersions, emulsions, nanoparticles shape, size and distribution



Drug discovery

Protein shape determination, biological membranes, drug delivery systems



Petrochemicals

Specific surface area of catalysts, polymerization, polymer structure and crystalline phase, colloidal dispersions in paint



Renewable energy

Catalysts for fuel cell, membranes, PV cell heterojunctions



Electronics

Liquid crystal display, nano devices characterization, thin film block copolymer



Composite materials

Carbon nanotubes, synthetic fibers, ceramics, metal alloys



Low noise flow cell for diluted systems



Capillaries



Temperature stage



Multiple sample holder for solid samples

# Nano-inXider<sup>®</sup>

## Comprehensive service for quick access to the SAXS/WAXS technique

New to the SAXS/WAXS technique? We are here to help. The Nano-inXider is supported by a comprehensive training and application consultancy team, that will work with you to ensure that you are able to realize the full potential of the system.

### Onsite installation and commissioning

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

### Operational training & scientific support

Comprehensive operational and scientific training programs both on-site and online are available to get you up and running quickly, provide continuous support and guidance with data analysis.

### Customer support

A large choice of customer support programs are available to ensure that each customer is able to take full benefit of the system. Direct support from Xenocs engineers through our hotline for both software and hardware issues coupled together with regional support by our local agents enables us to provide a 24 hour response time.

*Our mission is to ensure our customers full satisfaction for the complete lifetime of the system.*

*The Nano-inXider was designed as a low maintenance, and highly reliable instrument simplifying SAXS/WAXS experiments with maximized uptime.*

*As an ISO9001 certified company, we have implemented a customer support policy based on reactivity, comprehensive explanation, and regular follow-up.*

**Éric Danger**  
Customer Support Engineer



## Specifications

### X-ray beam delivery system

Source	Microfocus sealed tube - Cu 30 W/30 μm
Optic	Single reflection multilayer optic with 2D collimation
Collimation	Scatterless collimation with automatic change of settings

### Sample stage

X-Z stage	Motorized X-Z stage for remote multiple sample analysis and sample mapping
Phi stage	In plane sample rotation for azimuthal averaging of scattered signal
GISAXS stage	Possibility to do GiSAXS and GiWAXS, compatible with high temperature sample stage

### Sample holder

Sample holder base	Pre-aligned sample base plug-in for fast change of sample holder
Solid sample	Multiple sample holder (16 slots) for powder and solid samples Sample holder for large objects or thin film in transmission
Gel & powder sample	Multiple cells (8 slots) for powders and gels, also suitable for liquids
Liquid sample	Multicapillary holder (6 slots) Capillary flow cell Low noise flow cell
Robot sampler for liquid loading	Unit for automatic injection of multiple samples for remote solution scattering measurements
Thin film	Thin film transmission sample holder GISAXS sample holder for large samples
Temperature units	High temperature sample stage (-150 °C to 350 °C) for transmission and GiSAXS Extended high temperature sample stage (amb to 1000 °C) for solid sample in transmission
Tensile units	Tensile sample stage (0 to 200 N) with temperature control (-150 °C to 250 °C)

### Detectors

SAXS	Dectris Pilatus3 hybrid pixel detectors
WAXS	Dectris Pilatus3 hybrid pixel detectors allowing simultaneous and continuous SAXS and WAXS measurement up to 2θ 60 °

### Resolution and Q range

	Minimum q value (nm <sup>-1</sup> )	Maximum q value (nm <sup>-1</sup> )	Minimum d value (nm)	Maximum d value (nm)
With Cu K-α	0.029	41.30	0.15	216.66

### Software

System control and data acquisition with graphical user interface
Data processing and analysis software

### Facilities

Power consumption	< 2000 W (typical: 700 W)
Total footprint	87 cm x 93 cm (width x length) and 240 cm height All facilities are housed inside the enclosure
Weight	520 kg



People  
behind the  
Nano-inXider

Xenocs provides solutions for nanomaterial characterization using Small and Wide Angle X-ray Scattering technique.

Since its creation in 2000, Xenocs has built a strong reputation for its expertise in X-ray technology, the performance of its products and the quality of its customer support.

Today's solutions are based on key components and technologies which are the fruit of more than 17 years of research and development in the company.

Thanks to unique product concepts and proprietary technologies, Xenocs brings an unparalleled level of performance, opening new perspectives for advanced SAXS/WAXS measurements in the lab.

Our enthusiastic team of scientists and engineers with strong backgrounds in X-ray technology and specifically in the SAXS/WAXS technique is dedicated to offer, leading edge solutions for nanomaterial studies with top quality service.

Do not hesitate to contact our sales team to learn more how our solutions can help you.

2000

Launch of Xenocs as a spin off company from the Laue Langevin Institut

2007

Introduction of unique scatterless slits technology and highly collimated beam delivery system

2010

Introduction of first generation Xeuss SAXS/WAXS system based on unique proprietary clean beam technology

2014

Introduction of Xeuss 2.0 and Nano-inXider embedding 14 years of experience and key technologies developed by Xenocs

2017

Acquisition of SAXSLAB Aps and extension of Xenocs product range & markets

Next?

Watch this space – we have only just begun...

## Xenocs SAS - Headquarters

19 rue François Blumet  
38360 Sassenage - France  
T. +33 (0)4 76 26 95 40  
F. +33 (0)4 76 26 95 49  
E-mail: sales@xenocs.com  
www.xenocs.com

## Local Representation

### AMERICAS

#### USA, CANADA

■ **SAXSLAB U.S., Inc**  
7 Pomeroy Ln., Unit 3  
Amherst, MA 01002, USA  
T. +1 413 587 4000  
Contact: Scott Barton  
scott.barton@saxslab.com

#### BRAZIL

■ **Instrutécnica**  
Caixa Postal 6668, Cep: 13084-970 Campinas SP  
Av. Santa Izabel, 1.798A  
Distr. Barão Geraldo, 13084-643 Campinas SP  
T. +55 19 3289 9649  
Contact: Hugo Vasconcellos  
hugo@instrutecnica.com.br

#### MEXICO

■ **Spectramex, S.A. de C.V.**  
Cto. Circunvalación Poniente No. 1 Desp. 302  
Cd. Satélite, Naucalpan, Edo. de México. CP.53100  
México.  
T. +52 55 5562 9289  
Contact: Guillermo Picco  
spectramex@aol.com

### ASIA

#### SINGAPORE, MALAYSIA, THAILAND, INDONESIA, PHILIPPINES, VIETNAM

■ **Xenocs Asia Pacific Pte. Ltd.**  
541 Orchard Road, #09-01  
Liat Towers, Singapore 238881  
T. +65 9271 0917  
Contact: Fang Yin Lee  
fangyin.lee@xenocs.com

#### CHINA

■ **Unite Technology Limited (Beijing)**  
Room C131 Guo Feng Building  
No. 5 Fengti North Road, Fengtai District  
100166, Beijing P.R. China  
T. +86 10 88177239 / 68291299  
Contact: Xiao Zhang  
sales@unite-tech.com

#### INDIA

■ **HP Instruments**  
# 435, 1st Floor, 6th Avenue, 4th Main,  
Teachers Colony, Koramangala  
Bangalore - 560 034, India  
T. +91 80 2552 1990  
Contact: Suresh Pemmaiah  
hpi@hpinstruments.com

### JAPAN

■ **Hayashi-Repic Co., Ltd**  
1-28-3, Kita Otsuka, Toshima-ku  
Tokyo 170-0004, Japan  
T. +81 3 3918 5110  
Contact: Shigeru Morinaga  
morinaga@h-repic.co.jp

### SOUTH KOREA

■ **Korea Nano MSE**  
Amco Heriz 6F 608, Seongnamdaero 151,  
Bundang Gu, Seongnam Si, Kyungki Do, 13630 Korea  
T. 82 70 8822 1203  
F. +82 31 717 5202  
Contact: Hak-Jun Lee  
hakjun.lee@knmse.co.kr

### EUROPE

#### DENMARK, FINLAND, NORWAY, SWEDEN, THE NETHERLANDS

■ **SAXSLAB ApS.**  
Dr. Neergaards Vej 5D  
2970 Hørsholm, Denmark  
T. +45 31454637  
Contact: Isja de Feijter  
isja.de.feijter@saxslab.com

#### POLAND

■ **IRtech**  
ul. Wyzynna 8H  
30-617 Kraków, Poland  
T. +48 12 267 37 74  
Contact: Mateusz Krauz  
mk@irtech.pl

#### ROMANIA

■ **Laborsistem SRL**  
Str. Crinul de Gradina nr.3  
RO-032578 Bucharest 3  
T. +40 31 8053 799  
Contact: Sorin Buligescu  
sales4@laborsistem.co

### RUSSIA & OTHER CIS COUNTRIES

■ **Technoinfo Ltd.**  
121248, Russia, Moscow,  
Kutuzovsky Prospect  
9, building 2a, office 77  
T. +7 499 243 66 26  
Contact: Oleg KORNEYCHIK  
oleg@technoinfo.ru

### SPAIN, PORTUGAL

■ **Grupo Álava**  
Desarrollo de Negocio  
Área de Nanotecnología  
Albasanz 16, 28037 Madrid, Spain  
T. +34 915679705  
Contact: Juan G. Rodríguez Madrid  
jgrodriiguez@alava-ing.es

### MIDDLE EAST

#### EGYPT

■ **Advanced Instruments Technology**  
82 Al Amal Extension  
Maadi 11431, Cairo, Egypt.  
T. + 202 25203735  
Contact : Ahmad Ramadan  
ahmadaraky@aittechnology-eg.com

#### SAUDI ARABIA

■ **Abdulla Fouad**  
P.O.Box 257, Dammam 31411  
Kingdom of Saudi Arabia  
T. + 966 54 620 7933  
Contact: Ravindra Rawat  
ravi.rawat@abdulla-fouad.com

### OCEANIA

#### AUSTRALIA, NEW ZEALAND

■ **Diffraction Technology**  
194 Mt Eliza Way  
Mt Eliza, Victoria 3930 Australia  
T. +61 (3) 9787 3801  
Contact: Rod Clapp  
diffraction@bigpond.com

### Xenocs subsidiaries

■ Xenocs agents

