Upgrading Existing Diffractionometers with IµS
Incoatec offers a unique possibility to upgrade your existing diffractometer by installing our high-performance, air-cooled and low-power microfocus source IµS.

You have a Bruker AXS, Marresearch, Nonius, Rigaku, Huber or some other system?

Brighten it up with Incoatec’s state-of-the-art microfocus X-ray source IµS!

A significant increase in flux density of up to 2·10³ ph/s-mm² and smallest beam cross-sections of down to 95 µm can be obtained. With an IµS upgrade you will get the highest standard of quality, precision and safety Made in Germany. Our long-standing experience is based on more than 60 upgrades of IµS integrations into nearly all existing X-ray diffractometers worldwide. Your local service contact can be involved in the on-site installation. Additionally, Incoatec provides profound customer support during the whole project and beyond. We take care!

Your upgrade options:
- Source, optics and beam conditioning elements
- Single source upgrade for XRD, SCG, (GI)SAXS, XRR and many more applications
- Dual wavelength setup by adding IµS as complementary source
- Cu, Mo, Ag, Co and Cr radiation (others on request)

Your benefits:
- No maintenance, only single phase power and no water cooling required
- Full integration into existing safety circuits, new safety concept development on request
- Full compliance with European Machinery Directive 2006/42/EC

Upgrades on Bruker AXS Systems
Incoatec supports full integration into two decades of Bruker’s X-ray product portfolio with worldwide project experiences. This includes former Nonius diffractometers, all generations of Bruker DB machines and the Bruker SANS product lines. Close teamwork with the Bruker AXS system developers and local service staff ensures the highest standard of system integrity.

Upgrades on Other Systems
Incoatec has upgraded more than 30 other commercial X-ray diffractometers from all over the world. An audit of the existing radiation safety system according to your local safety demands with required upgrades is mandatory. Together with detailed experiences about third-party controllers systems Incoatec offers a whole in one diffractometer solution even with these non-Bruker machines.

Special Engineering
Cutting-edge ideas deserve state of the art technical support. An international team of engineers, physicists and chemists with a broad background in all kinds of scientific applications find the optimal solution also for your specific application. Contact us, challenge us.

SCATEX - Scatterless Pinholes for Small Angle Scattering and X-ray Diffraction
Main features
- strongly reduced parasitic pinhole scattering
- resolution and photon flux enhancement
- easier and faster pinhole alignment
- no antiscatter pinhole needed
- diameters 30-2000 µm
- SCATEX-Ge for lower and SCATEX-Ge for higher energies

A SAXS setup with a typical 3-pinhole collimation. The beam diagram clearly shows that even with an antiscatter pinhole the beam stop needs a large diameter due to the parasitic scattering. SCATEX pinholes the antiscatter pinhole becomes dispensable and the beam stop only needs to frame the size of the primary beam. This enables a higher resolution and photon flux.

SCATEX Pinholes for SAXS Home-Lab Systems

Advantages of a SCATEX 2-pinhole setup
- approx. 6 times higher scattering intensity with similar resolution
- higher flux possible due to a larger possible beam defining pinhole
- smaller footprint due to less pinholes
- faster data acquisition possible

SCATEX Pinholes for Synchrotrons
D-Comparison of Tungsten Slits and SCATEX-Ta Pinholes
The measurements were performed at 13 keV at the Nanofocus Endstation P03 beamline at PETRA III with typical photon fluxes of 10³·10⁸ ph/s.

Detector images of the parasitic aperture scattering at 13 keV. The standard beamline setup S5 denotes the position of the beam defining aperture and S6 the position of the antiscatter aperture.

- a single SCATEX-Ta pinhole replaces both beam defining slit S5 and antiscatter slit S6
- the beam-defining SCATEX-Ta aperture can be positioned closer to the sample
- one order of magnitude less parasitic aperture scattering with SCATEX pinholes

D-Comparison of SCATEX-Ge with Conventional Pinholes and Scatterless Ge Slits
The corresponding measurements were performed at the PTF four-cryostat monochromator beamline at BESSY II with a typical photon flux in the range of 4·10³·4·10⁸ ph/s. The tested apertures were aligned centric into the primary beam.

Detector images of the parasitic aperture scattering at 8 keV.

- SCATEX-Ge pinholes
  - 2 orders of magnitude less parasitic scattering
  - much less scattering into the q-space
  - scattering pattern is circular, thus showing the high overall structural quality of the pinhole

SCATEX-Ge pinholes
- up to 8 times less parasitic aperture scattering
- higher data quality and faster data acquisition

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