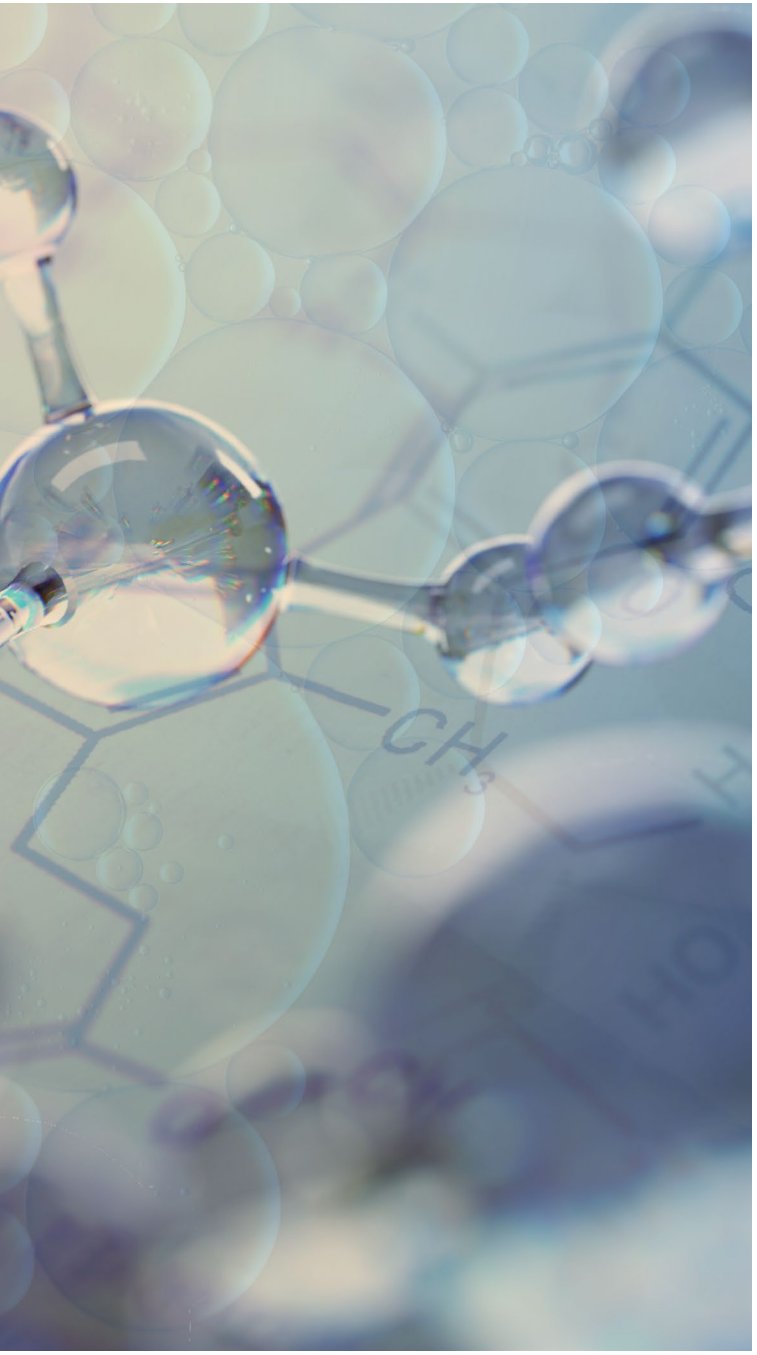
SINGLE CRYSTAL PRODUCTS

SINGLE CRYSTAL X-RAY DIFFRACTION

Rigaku oxford diffraction

Reach new limits with Rigaku single crystal products.



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WHY CHOOSE RIGAKU OXFORD DIFFRACTION?

WHO ARE WE?

Rigaku employs over 1,400 staff world-wide, bringing together expertise from all corners of the globe. With major research and development sites in Japan, Europe and the U.S., we develop every core technology in-house, including X-ray sources, optics, detectors, goniometers and software. We believe this way we can provide a complete, tightly integrated solution that offers extreme performance and user friendliness.

We take a rigorous scientific approach to product development to continually improve our products and to incorporate new approaches and find new applications of our technology. Craftsmanship and ingenuity go hand-in-hand, resulting in our respected, reliable range single-crystal X-ray diffractometers.

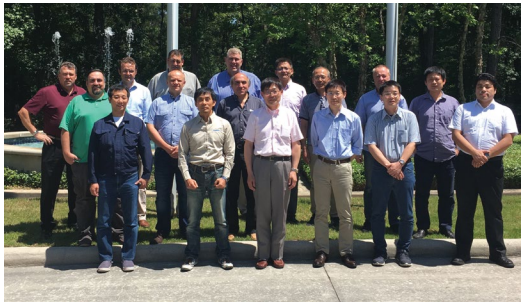
When you buy from Rigaku Oxford Diffraction, you are getting more than just a diffractometer.

Who We Are ▶

WORLD CLASS SCIENTIFIC SUPPORT

High-quality instrumentation is only as good as the user running it. That's why, following installation of your new system by one of our highly trained engineers, we provide face-to-face, personalized, on-site training by one of our highly experienced scientific team. Turning you into an expert user able to produce the best results from your new instrument is vital to your success as well as ours. We stay in touch with our customers over the instrument lifetime to offer scientific support or exchange of ideas via our user forum and through attendance at conferences, regular user meetings or by phone or email.

Customer Training ▶



Global Service Management Team.

PROMPT TECHNICAL SUPPORT

Even the most reliable systems require support at times. With a global service presence and highly trained engineers, help is never far away. Our instruments and software are designed with remote support in mind. This helps us to help you keep your system at peak performance, minimizing both downtime and maintenance costs. Most problems can be diagnosed or fixed via the Internet. If parts are required, they are shipped from one of our regionally located warehouses. If a visit is required, we coordinate parts delivery with the engineer's arrival to ensure minimal downtime and efficient repair of your system.

Our engineers undergo regular training to keep their skills sharp and to ensure their readiness for new products as they arise.

FIND YOUR PERFECT MATCH

As we strive to increase our understanding of the world, high-quality research tools are essential. We offer a range of diffractometers, from traditional sealed tube systems through microfocus sealed tubes and up to ultrahigh-flux rotating anode systems, letting you choose the right technology and performance level for your research. All Rigaku Oxford Diffraction systems come with one of our own instantaneous digital photon counting HyPix detectors as standard.

XtaLAB mini II

The perfect addition to any synthetic chemistry laboratory, the XtaLAB mini II single crystal X-ray diffractometer will enhance research productivity by offering affordable structure analysis capability without the necessity of relying on a departmental facility. With the XtaLAB mini II benchtop diffractometer, you no longer have to wait in line to determine your structures. Instead your research group can rapidly analyze new compounds as they are synthesized in the lab without having to queue up in the departmental core facility.

Learn More ▶

XtaLAB Synergy-i

Today's quintessential single crystal X-ray diffractometer includes a high-flux, low-maintenance microfocus sealed tube X-ray source, a high-precision 4-circle kappa goniometer and a modern X-ray detector. The XtaLAB Synergy-i is built on components that represent the latest technologies and can be upgraded from a single source to a dual source instrument in the future. The system can be equipped with Cu and/or Mo sources allowing for a broad range of sample types to be evaluated. The XtaLAB Synergy-i is controlled by the fully integrated, user-inspired CrysAlis^{Pro} software package that is capable of collecting and processing data efficiently and accurately, so you achieve the best data possible.

Learn More ▶

XtaLAB Synergy-S

Structural scientists have made this our most popular diffractometer. It is the perfect low-maintenance system with the possibility of one or two X-ray sources. Whether you are a MOF chemist trying to squeeze a good structure out of poor crystals or a structural biologist who wishes to screen protein crystals before shipping them to the synchrotron, the XtaLAB Synergy-S diffractometer is the perfect crystallography system if low maintenance is your primary concern.

Learn More ▶

XtaLAB Synergy-R

The XtaLAB Synergy-R is the most powerful rotating anode microfocus single crystal X-ray diffractometer available in a compact cabinet. For protein crystallographers who wish to have a powerful, well-integrated diffractometer and only need to use one port of the rotating anode, the XtaLAB Synergy-R provides the perfect combination of high-flux performance with a low-noise Hybrid Photon Counting (HPC) X-ray detector. Combining high-performance components, the XtaLAB Synergy-R allows you to collect high-quality diffraction data on even the weakest of samples. Moreover, the XtaLAB Synergy-R offers a number of design features that extend the experimental flexibility to address the most challenging samples.

Learn More ▶

XtaLAB Synergy-DW VHF

One source with two high-flux wavelengths is the foundation of the revolutionary XtaLAB Synergy-DW VHF single crystal X-ray diffractometer. It combines the increased flux of a rotating anode X-ray source with the flexibility of two different wavelengths, making it ideal for laboratories exploring a wide range of research interests. It is the perfect diffractometer for a core facility where protein crystallography and small molecule crystallography are both practiced and high throughput and small samples are a key concern.

Learn More ▶

THE HyPix FAMILY

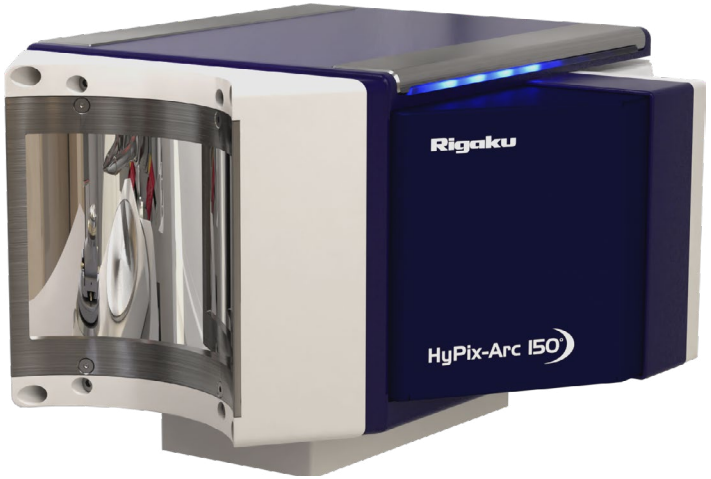
Rigaku's own HyPix family of detectors use Hybrid Photon Counting (HPC) technology to enable direct X-ray photon detection and counting. Direct X-ray photon detection means that X-ray photons are counted instantaneously as they arrive at the detector. There is no conversion to visible light by a scintillator so the energy of the photon can be assessed at moment of detection. This leads to essentially noise-free images.

THE HyPix-Arc 150°

In the goal of offering faster detectors, the traditional solution has been to chase larger and larger area. To achieve this, either cheaper fabrication technologies must be used, or the cost must increase. With the HyPix-Arc 150°, less is more. Arranging sensors on a curve is a smarter use of their area, allowing theta coverage exceeding the largest detectors while still offering the highest performing detection technology. With the highest static 2θ range available in the home lab, the HyPix-Arc 150° offers you the best approach to data collection, collecting reflections all the way up to and beyond the IUCr recommended minimum limit for common home lab wavelengths. The curved geometry simplifies scaling for the best data quality, accelerates high-resolution data collection and reduces distortion of reflection profiles compared to large flat detectors. Based on HPC technology, all of the benefits of direct, instantaneous X-ray photon counting are present. A single-pixel top-hat shaped point spread function means the detector can be used at much closer crystal-to-detector distances than large scintillator based detectors while achieving the same spatial resolution. Energy discrimination, fast frame rates and no dark or readout noise make the HyPix-Arc 150° a truly amazing detector and a valuable addition to your research laboratory.

Learn More ▶

Unique Benefits of the HyPix-Arc 150°
Curved geometry enables:
• Higher theta coverage in a single image
• Capturing more diffracted photos per exposure
• The lowest reflection profile distortion
• All reflections to be measured under the same conditions



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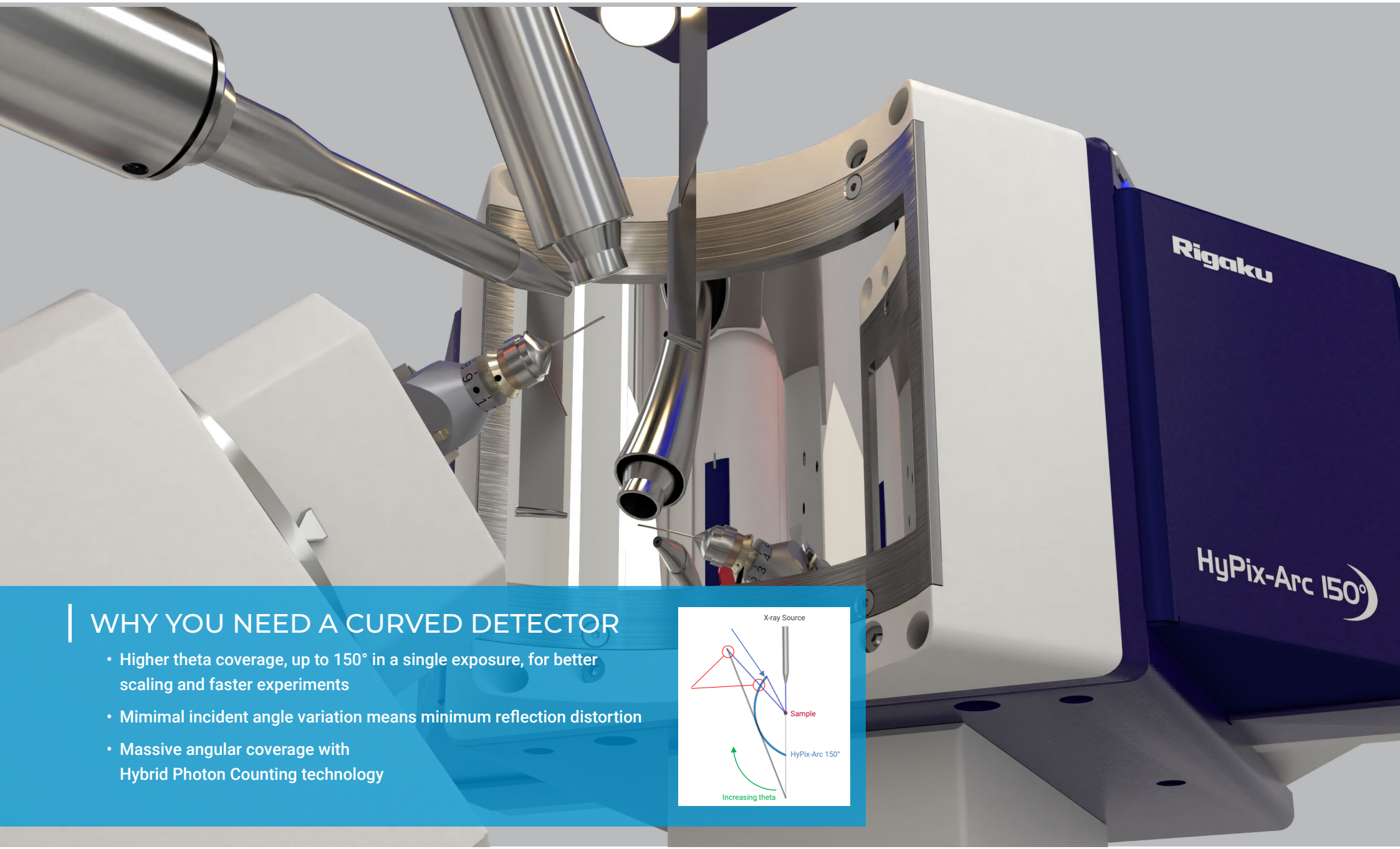


WHY YOU NEED A CURVED DETECTOR

- Higher theta coverage, up to 150° in a single exposure, for better scaling and faster experiments
- Mimimal incident angle variation means minimum reflection distortion
- Massive angular coverage with Hybrid Photon Counting technology

THE HyPix-6000HE

The HyPix-6000HE detector features our fastest frame rate and intermediate theta coverage. The 100 Hz frame rate allows for data fine slicing even at the fastest goniometer speeds. Direct detection of X-ray photons, as with all HyPix family detectors, gives the best chance at detecting and counting X-ray photons with virtually no noise and ultra-fast operation. The HyPix-6000HE pixels incorporate dual counters enabling several modes of operation. Rapid Alternating Counter Electronics (RACE) technology enables the 100 Hz zero deadtime mode, ensuring that no pixel is blind for more than a few nanoseconds during exposure to X-rays. The high dynamic range mode combines the counters to offer a massive 31-bit counter depth. Dual thresholding offers differential modes and selective signal suppression.

Learn More ▶

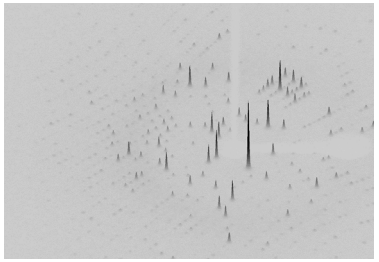
THE HyPix-Bantam

The HyPix-Bantam punches above its weight, offering cutting-edge HPC features in a more affordable package. The detector offers direct X-ray photon detection and photon counting for the best data quality, along with a small pixel size for excellent spatial resolution even at short sample-to-detector distances. With virtually no readout noise, the detector gives you the best chance of recording signal information from your sample without subsequently swamping the signals with detector noise.

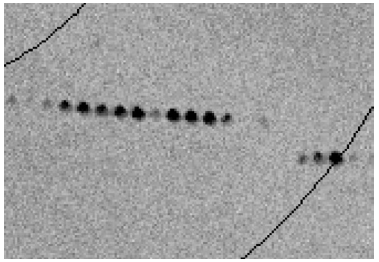
Learn More ▶

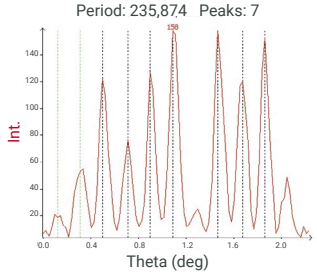
HPC TECHNOLOGY FOR THE BEST DATA

Direct detection, no scintillator: Enables energy thresholding, instantaneous photon counting and massive dynamic range.



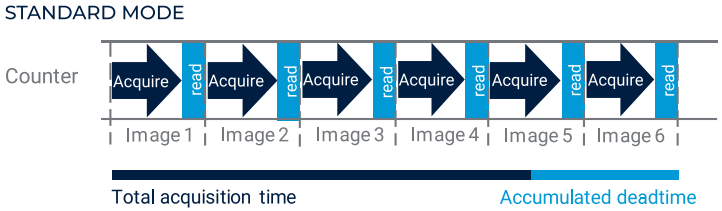
Small pixels with single pixel top hat point spread: With no phosphor, electrons generated by an incident photons stay confined to a single pixel for the best chance at resolving twins, proteins and other long axes, even at close distances.

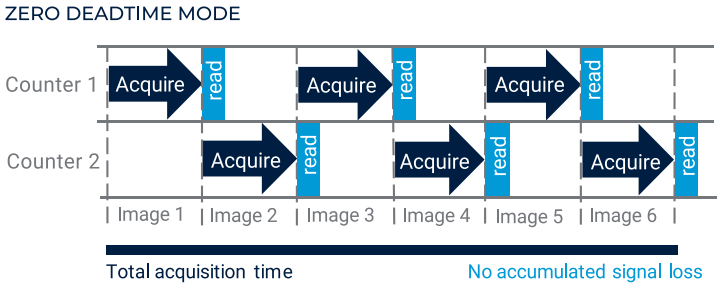


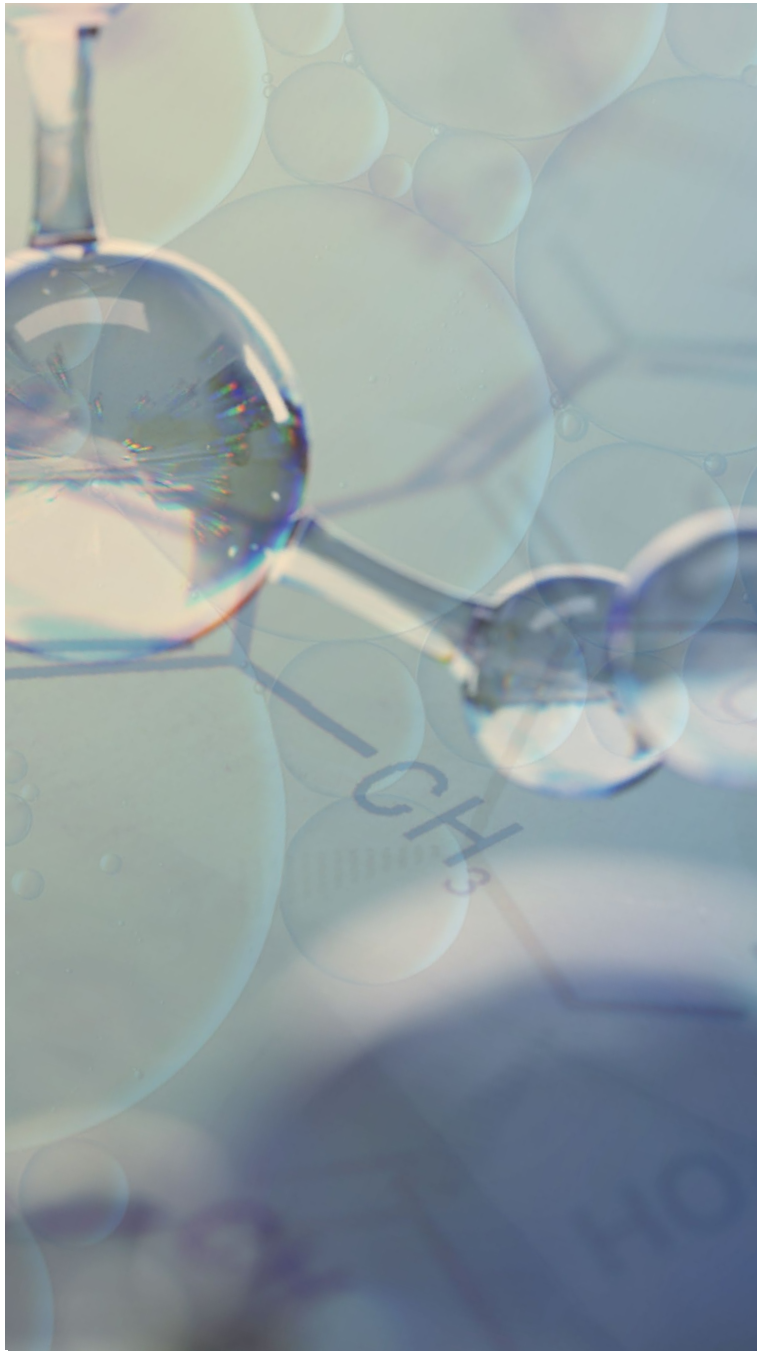


RACE technology for 100 Hz and zero deadtime mode: The HyPix-6000HE and HyPix-Arc 150° contain RACE technology. Two counters per pixel allows up to 100 Hz* frame rates with negligible deadtime.

**Depending on HyPix model*







XtaLAB mini II

SMALL BUT MIGHTY

The XtaLAB mini II benchtop X-ray crystallography system is designed to produce publication-quality crystal structures. The simple design and small footprint make it perfect as a quick access system in a synthetic lab, teaching crystallography on a live instrument or simply when lab space is at a premium.

Equipped with a Mo sealed tube source running at 600 W, SHINE focusing optics, and a HPC detector with no readout or dark noise, the XtaLAB mini II offers research level performance in a compact package.

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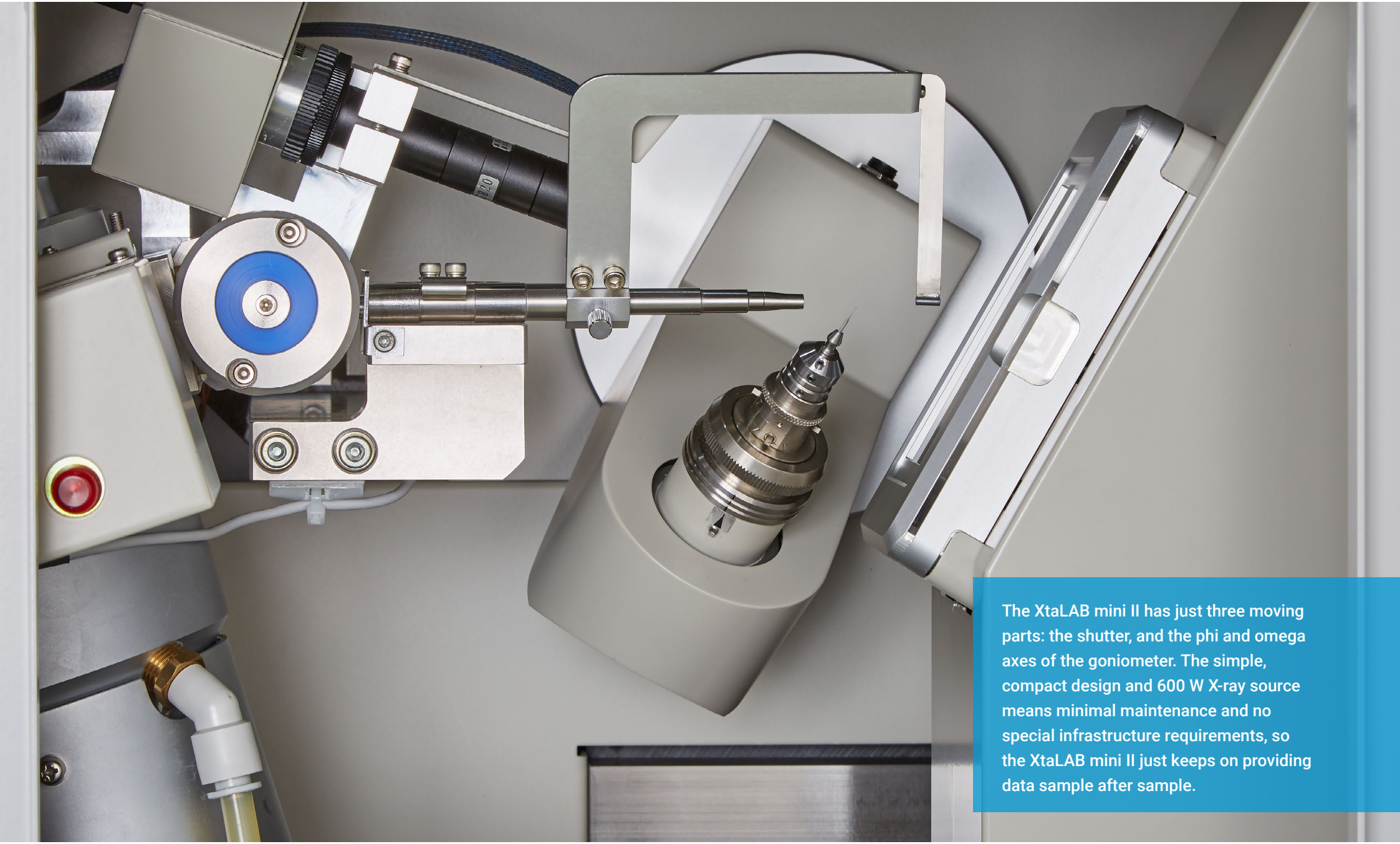
Unique Benefits of the XtaLAB mini II
Benchtop diffractometer providing publication-quality results
User-friendly and semi-automated
Robust enough for students to operate in a teaching environment
Latest low noise HPC detector technology
Researcher and student friendly, comprehensive CrysAlis^{Pro} software

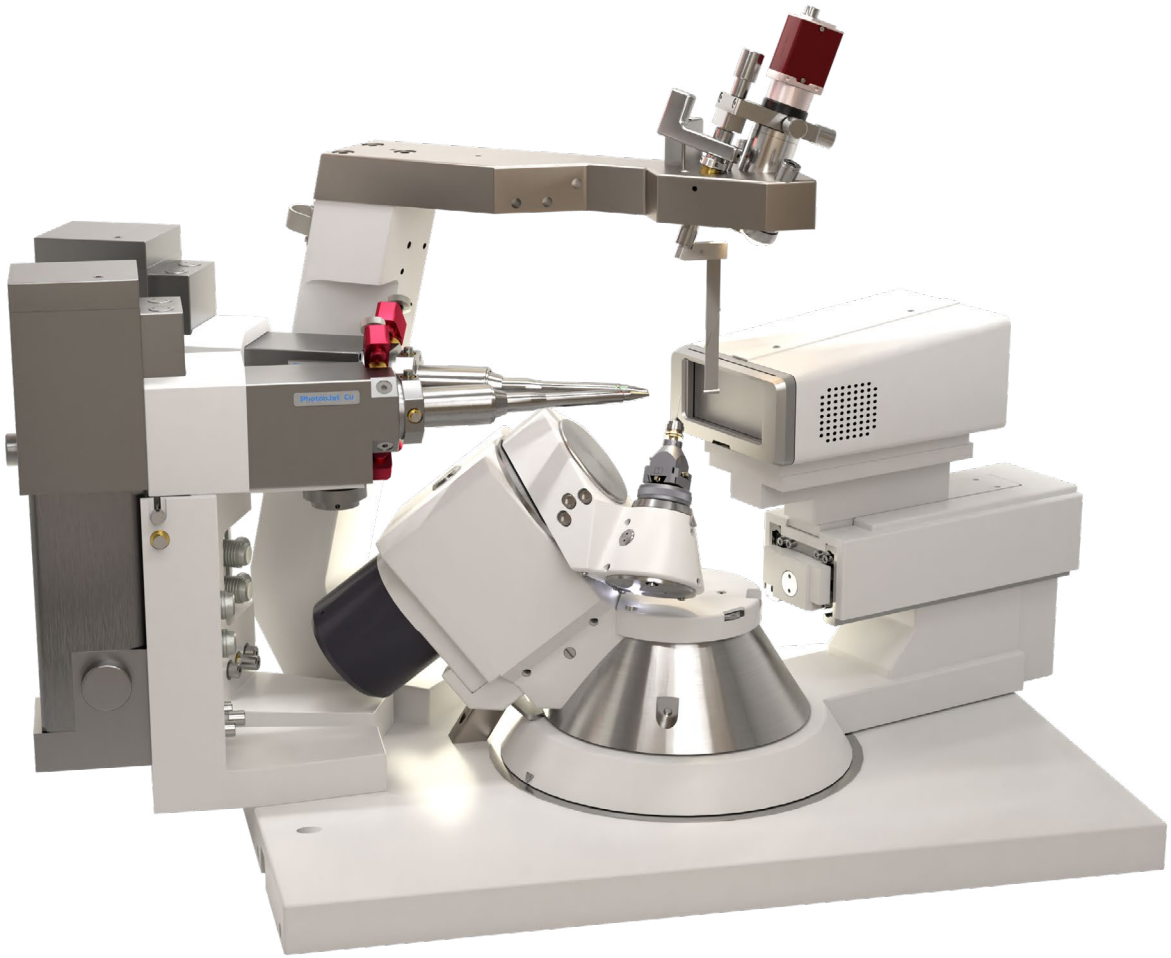
THE XtaLAB mini II DIFFRACTOMETER

Features

- HPC detector with 100 µm pixels and no readout or dark noise
- Simple design with a small footprint
- Sealed tube molybdenum X-ray source with focusing optics
- Compatible with a Cryostream 800 and Smartstream low temperature attachments
- Compact, fail-safe radiation enclosure



The XtaLAB mini II has just three moving parts: the shutter, and the phi and omega axes of the goniometer. The simple, compact design and 600 W X-ray source means minimal maintenance and no special infrastructure requirements, so the XtaLAB mini II just keeps on providing data sample after sample.



XtaLAB Synergy-i

A CUTTING-EDGE DIFFRACTOMETER FOR ALL YOUR CRYSTALLOGRAPHY NEEDS

Whether you select a dual or single source microfocus configuration, the XtaLAB Synergy-i provides the latest technology, from the sources to the detector.

- The latest HPC detector for instantaneous, digital photon counting
- Both dual and single source configurations with microfocus technology as standard
- Kappa goniometer ensures publication standards are met, even for low symmetry samples

Learn More ▶

Unique Benefits of the XtaLAB Synergy-i
The scintillator-free HPC detector has been designed by Rigaku to ensure cutting-edge performance with instantaneous digital X-ray photon counting technology for unparalleled sensitivity.
The microfocus PhotonJet-i sources (Cu/Mo), available in dual or single source configurations, have low power consumption, yet provide high flux in order to study a variety of sample types.
The 4-circle kappa goniometer ensures that the most efficient data coverage is achieved even for the lowest symmetry P1 samples whether Cu or Mo radiation is used.
Latest low noise HPC detector technology.
Researcher and student friendly, comprehensive CrysAlis^{Pro} software.

Sample Type	Mo	Cu
Purely inorganic	✓	✓
Organometallic	✓	✓
Organic	✓	✓
Absolute structure (organics)		✓
Twinning	✓	✓
Charge density	✓	
Incommensurates	✓	✓
Highly absorbing	✓	✓

✓ Preferred radiation choice

Additional Features

- The XtaLAB Synergy-i is compatible with most low temperature devices, including the Smartstream, Cryostream 700, 800, 800+ and Cobra.
- Convert your XtaLAB Synergy-i from a single source to a dual source instrument at a later date, along with other upgrade options.

Play Video ▸

XtaLAB Synergy-S

FAST, ACCURATE, INTELLIGENT

Designed for Data Quality and Speed

The common goal of any single crystal experiment is to efficiently and accurately measure reciprocal space data.

This is true whether you are determining the structure of a novel chemical compound, screening protein crystals before a synchrotron trip or measuring highly redundant, high-resolution data for a charge density study. In all cases, the quality of the data generated by your diffractometer, as well as the speed and ease by which you can measure the data, is paramount to your productivity.

The XtaLAB Synergy-S diffractometer meets and exceeds these needs. High-performance components and user-inspired software come together to produce accurate datasets, fast and in an intelligent fashion.

The XtaLAB Synergy-S comes as single or dual source with PhotonJet-S X-ray sources (Mo, Cu, or Ag), a high-speed kappa goniometer, an HPC detector, and an ergonomically designed radiation enclosure.

Choose one of Rigaku's own HyPix detectors, including the new HyPix-Arc 150° for extreme angular coverage and photon counting. Selected DECTRIS® HPC detectors, including Pilatus and Eiger models, are optionally available.

Read what our customers say about the XtaLAB Synergy-S

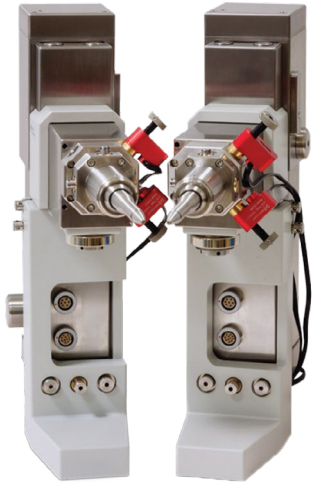
★★★★★

Read More ▸

Unique Benefits of the XtaLAB Synergy-S
Extremely powerful and tightly stabilized X-ray source for best, consistent performance
Highest-throughput sealed tube diffractometer available
Class-leading results in all applications
Extremely low noise photon counting detector
Researcher and student friendly, comprehensive CrysAlis^{Pro} software licenses

Features

- PhotonJet-S X-ray sources use high-reliability X-ray tubes with Rigaku designed multilayer optics.
- A fast goniometer allows data collection scan speeds of up to 10°/sec.
- A choice of Rigaku HyPix detectors with true photon counting and fast frame rates.
- AutoChem and "What is This?" are included with every XtaLAB Synergy-S diffractometer. Automatically solve structures and find out what your sample is in a few seconds before committing to a full dataset.
- Highly stable closed-circuit water-cooled tubes produce the most consistent X-ray output with no external water or chillers.
- Small molecule or protein capable with dedicated workflows.
- Highest level of safety with multiply redundant electromechanical safety circuits.
- Online diagnostics and troubleshooting to diagnose and fix almost all problems without a site visit.



PhotonJet-S

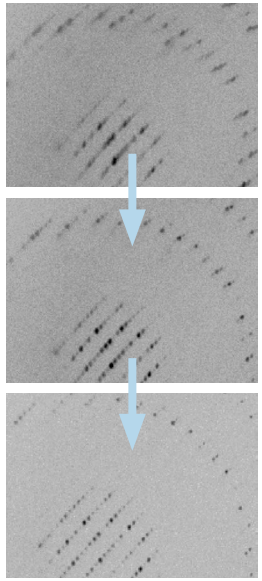
The XtaLAB Synergy-S is defined by its new PhotonJet-S X-ray source. With a new microfocus sealed tube designed for Rigaku and engineered specifically for long lifetime single crystal research, the PhotonJet-S incorporates a new mirror design from Rigaku Innovative Technologies and new alignment hardware.

The PhotonJet-S sources provide almost double the flux for all three target types (Mo, Cu, Ag) compared to the previous generation.

For the best data quality it is important to ensure any source provides highly reproducible flux frame after frame. As tube temperature changes, so does the X-ray flux reaching your sample. Controlling the temperature of our sources using closed-circuit water cooling offers the best solution for best solution for consistency, high performance and reliability in a completely standalone package.

BEAM CONDITIONING

Where overlapping peaks are a concern, *e.g.* large unit cells, proteins, twinned or incommensurate, high beam divergence is undesirable. On PhotonJet sources, a software-controlled, motorized variable beam slit is available as an option to alter divergence to adapt the source to your sample's requirements. For those samples where intensity matters most, the slit can be fully opened, giving the highest flux. For those where peak sharpness and overlap are factors, the beam can be limited to a divergence anywhere between 1 to 10 mrad.



Divergence = 9.5 mrad

Divergence = 6.5 mrad

Divergence = 4 mrad

The protein catalase has a 229 Å axis that requires reduction of the divergence angle in order to properly resolve the reflections. These images were obtained at a crystal-to-dector distance of 70 mm.

XtaLAB Synergy-R

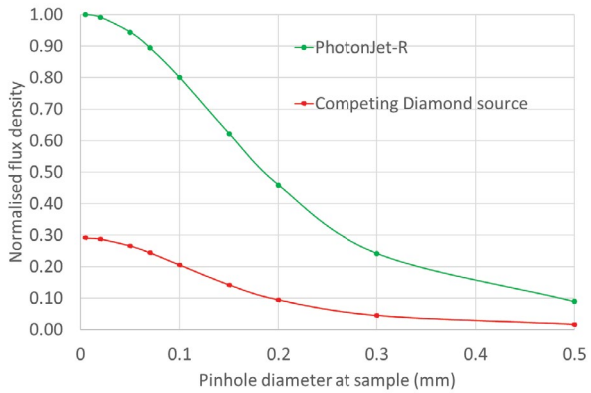
RAW POWER, REFINED

Compact Microfocus Rotating Anode Based System

A unique combination of cutting-edge technologies allows the XtaLAB Synergy-R to claim the title of "World's Fastest Diffractometer."

Greatly reduce data collection time or open the doors to research targets you never dreamed you could study in your own lab. Class-leading brightness, high reliability built into every component and ease of use—for difficult samples, the XtaLAB Synergy-R is the smart choice.

Learn More ▶



Unique Benefits of the XtaLAB Synergy-R
A bright source, a fast goniometer, and an extremely low-noise, photon-counting detector means that the XtaLAB Synergy-R system is well-suited to accommodate almost anything you can throw at it.
The PhotonJet-R microfocus rotating anode has the lowest maintenance of any modern rotating anode or metal jet generator.
The XtaLAB Synergy cabinet provides electronically controlled lighting and plenty of room for tools and a microscope.
The HyPix-6000HE detector directly detects X-ray photons and delivers a single pixel top hat point spread function to minimize noise.
Researcher and student friendly, comprehensive CrysAlis^{Pro} software licenses.

Features

- The XtaLAB Synergy-R has significantly more flux than current microfocus sealed tube sources without resorting to ultrahigh divergence.
- An innovative continuously variable slit system is available so you can tune the source divergence to your sample.
- Faster motor speeds of the goniometer have been optimized to take advantage of the high-flux X-ray source.
- Telescopic 2θ arm can access full theta range but also allows long crystal-to-detector distances for samples that need it.
- The data quality is exceptional due to the sophisticated HPC technology employed by Rigaku detectors. No readout noise; no dark noise; and instantaneous, digital, single photon counting give the best data quality possible.

PhotonJet-R

The PhotonJet-R comes from the same pedigree as the MicroMax-007 HF, of which there are over 1000 units in use around the world.

The PhotonJet-R X-ray source applies the lessons learned over the development and lifetime of the MicroMax™-007 rotating anode to produce a new generation, high performance rotating anode source.

With the source mounted directly onto the goniometer, the XtaLAB Synergy-R provides a stable and robust solution that ensures consistently high performance. Confocal optics designed by Rigaku Innovative Technologies offer high brilliance and an optional continuously variable slit assembly gives high brilliance or low divergence as needed to cater to any sample.

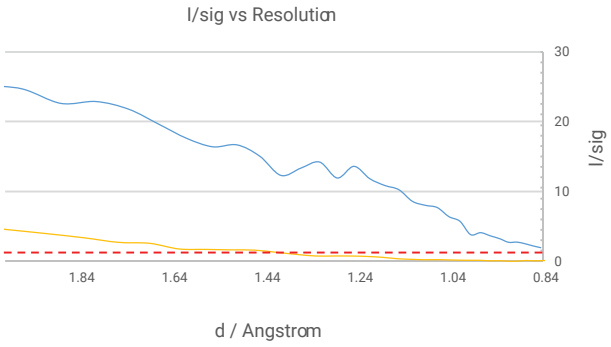
PROVEN RELIABILITY

The PhotonJet-R source was designed with reliability in mind. Clever Rigaku engineering makes filament changes easy, like swapping a printer cartridge, with no need to realign the source each time.

Scheduled maintenance involves one annual visit from a Rigaku engineer, as with all XtaLAB Synergy diffractometers, and typically takes 1-2 days. With the anode exchange program, you get the benefit of rotating anode power with the convenience of sealed tubes.

WHY CHOOSE A ROTATING ANODE?

Don't miss out on an important result you need and get the flux you need to study smaller and more weakly diffracting samples that you simply couldn't measure before.



The diffraction limit of a 10 µm small organic crystal was too low to meet publication standards (red dotted line) when collected with a Synergy-S diffractometer (yellow line). When the same crystal is collected with a PhotonJet-R source (blue) publication quality can be reached.

XtaLAB Synergy-DW VHF

INTENSELY VERSATILE

One Anode, Two Wavelengths

Investing in a rotating anode often leaves one more important decision to make. Which wavelength is right for me?

The XtaLAB Synergy-DW VHF lets you have your cake and eat it, too, offering rotating anode flux density with not one, but two wavelengths.

In a chemical crystallography X-ray laboratory, a wide range of samples often need to be studied, from the weakly diffracting to the strongly absorbing. Having the choice of two wavelengths gives you the flexibility to address the vast majority of sample types without needing two diffractometers.

The XtaLAB Synergy-DW VHF offers even more performance than its predecessor, with more than twice the flux density available.

Play Video ▸

Unique Benefits of the XtaLAB Synergy-DW VHF
Unique dual wavelength diffractometer
Exceptional data for charge density studies to protein crystallography and everything in between
Significantly more flux than any microfocus sealed tube source
The HyPix-6000HE detector directly detects X-ray photons and delivers a single pixel top hat point spread function to minimize noise
Researcher and student friendly, comprehensive CrysAlis^{Pro} software licenses

PRECISION ENGINEERING

The XtaLAB Synergy-DW VHF represents a remarkable technological achievement. Rigaku has in-house expertise in design and manufacture of each component needed to realize a highly precise, high-performance instrument of this class.

- High-performance multilayer confocal X-ray optics capture and focus the X-rays onto the target.
- A specially designed, motorized, dual-optic chamber moves the chosen optic into place with high accuracy and precision and no need to realign.
- A carefully designed pneumatic system moves the target track under the electron beam without breaking vacuum.
- Switching wavelength takes only **five minutes**.

APPLICATIONS

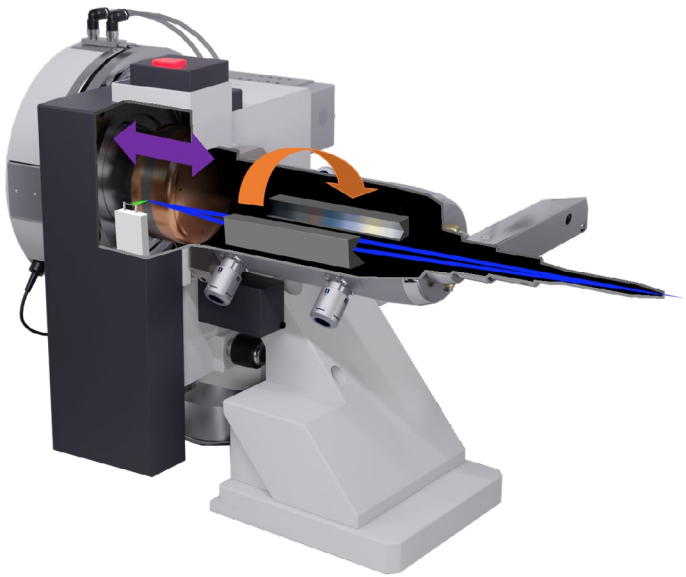
Whether your need is high throughput or you just need to enhance weaker diffraction, the XtaLAB Synergy-DW VHF is able to provide. The unique single source form factor offers you the possibility of using two wavelengths from one collimator without another source restricting detector access on one side. If your research involves high-resolution data collection, (*e.g.* charge density), this enhances your ability to collect complete data quickly without having to compromise with a single source instrument.

A choice of two wavelengths lets you cover a wide range of samples and techniques, from proteins to minerals, charge density to absolute configuration.

DETECTORS

The XtaLAB Synergy-DW VHF can be purchased with the HyPix-6000HE or HyPix-Arc 150° detectors. Rapid Alternating Counter Electronics (RACE) technology allows pixel counters to be switched in just a few nanoseconds enabling a zero dead time mode with a 100 Hz frame rate. Both the RACE technology and fine slicing ensure both strong and weak data can be measured accurately with the higher flux of rotating anode sources.

With more than twice the flux density over its predecessor, the XtaLAB Synergy-DW VHF offers even more versatility in the home lab. The extra brightness allows even more challenging samples to be studied whether they are smaller or have poorer crystallinity.



- Custom-designed pneumatic system, positions the required target track under the electron beam.
- Electron beam with micro-focal spot on anode surface.
- High-precision mechanism rotates required optic into position with extreme accuracy and precision.
- X-ray beam focused onto sample via high-performance multilayer double bounce optics.

XtaLAB Synergy-Custom

The Synergy goniometer can be configured in numerous ways with Rigaku's rotating anode sources to fit the needs of any lab.

- The second port of the X-ray source can easily be utilized to mount an additional goniometer with a custom enclosure.
- A larger rotating anode source, the FR-X, provides more than double the flux of the MicroMax™-007 HF and can be configured with a number of goniometer and detector combinations.
- For the ultimate in charge density applications, short wavelength Ag anodes are available, giving the highest flux possible.

Learn More ▶

THE ULTIMATE IN FLEXIBILITY

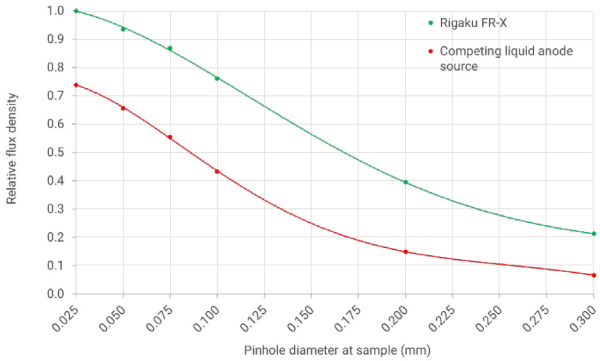
When you simply must have more flux, more space or dual port operation, the XtaLAB Synergy-Custom is our most flexible X-ray crystallography solution. Built around the same high-performance goniometer as the rest of the XtaLAB Synergy line, the XtaLAB Synergy-Custom offers you the possibility of the highest achievable flux and performance available in the home lab today. With options of the ultrahigh-flux FR-X series of rotating anodes or the MicroMax-007 HF, the XtaLAB Synergy-Custom is designed with flexibility at its core so it can be molded to your needs. When the size of the standard XtaLAB Synergy safety enclosure is too restrictive, or you wish to have dual port functionality, the XtaLAB Synergy-Custom can be installed into room-sized safety enclosures, giving you the flexibility to add a second goniometer or any large equipment you need for your research.

Having two available ports means that a system can be configured with two end stations, satisfying different experimental needs, *e.g.* SAXS, or simply allowing simultaneous experiments to be run on different samples.

Other options that are often considered when configuring an XtaLAB Synergy-Custom include sample mounting automation and *in situ* screening of crystallization plates.

THE HIGHEST-FLUX X-RAY SOURCE

The Rigaku FR-X is the highest-flux home laboratory X-ray source available today, providing brightness exceeding some second generation bending magnet synchrotron beamlines, with around 25 times the flux density of a microfocus sealed tube system. If your research demands raw power either for throughput, poor crystallinity or you are studying exceptionally small crystals, the FR-X might be the source for you.



FR-X X-ray Generator ▶

MicroMax-007 HF ▶

Play Video ▸

BioSAXS-2000^{nano}

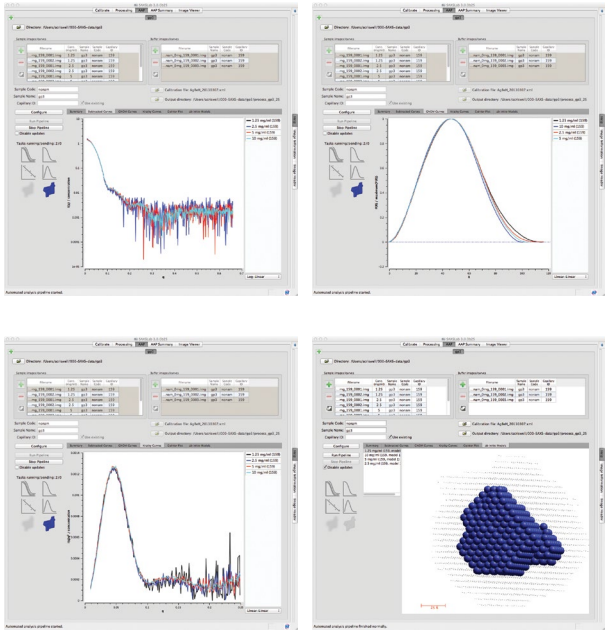
SMALL ANGLE X-RAY SCATTERING AND BioSAXS AUTO

Rigaku Oxford Diffraction's BioSAXS-2000^{nano} is a small angle X-ray scattering (SAXS) system to measure SAXS data for both macromolecules and materials samples. The BioSAXS-2000^{nano} is a modern variation of the Kratky camera that eliminates the need for data corrections due to smearing, and is capable of acquiring data on most macromolecular solutions in 15-30 minutes. The BioSAXS-2000^{nano} has the advantage that it can be mounted on a variety of X-ray sources, including the open port of a rotating anode.

Key Features

- 2D modem Kratky system with OptiSAXS confocal optic
- Automated alignment of collimation system, sample positions and beam stop
- Photodiode beamstop with real-time intensity measurements and sample transmission corrections
- Rigaku HyPix-3000 HPC detector to deliver maximum signal to noise
- Optional stages for studying materials and anisotropic samples

Benefits of the BioSAXS-2000^{nano}
Easily installed on the open port of an existing Rigaku generator.
2D Kratky design means higher flux on the sample without the need for data corrections due to smearing.
OptiSAXS optic offers a high X-ray capture angle to deliver outstanding flux performance and faster SAXS experiments.
Rigaku's HyPix-3000 HPC detector delivers the highest sensitivity and lowest noise, making it ideal tor measuring the weak scattering signal from biological solutions.
The BioSAXS AUTO package adds automated sample loading, data collection and analysis to make SAXS samples faster to perform and easier to evaluate for both novices and experts.
New "nano" options expand the measuring capabilities of the instrument for measuring WAXS data as well as data for anisotropic and materials samples.



AUTOMATIC ANALYSIS PIPELINE (AAP)

The AAP utilizes the industry standard ATSAS package to provide automatic data analyses. This allows for quick evaluation of sample quality, with color-coded results so you can easily identify well-behaved samples versus those that exhibit aggregation and concentration effects.

The AAP performs the following steps automatically:

- Sample evaluation and aggregation identification
- SAXS profile averaging and buffer subtraction
- Guinier plot generation and calculation of R_g and I(0)
- Kratky plot generation with feedback on folded/unfolded state
- Porod volume and MW calculation
- P(r) calculation with report of real space R_g and D_{max}
- Estimation of q_{max} from useful Shannon channels
- MW calculation by the Volume of Correlation, Vc
- Envelope calculation, averaging and analysis
- Shape classification
- Results for all concentrations of a sample are displayed with a comprehensive table of calculated structural parameters, along with warnings to the user in cases of poor sample quality, aggregation or other problems

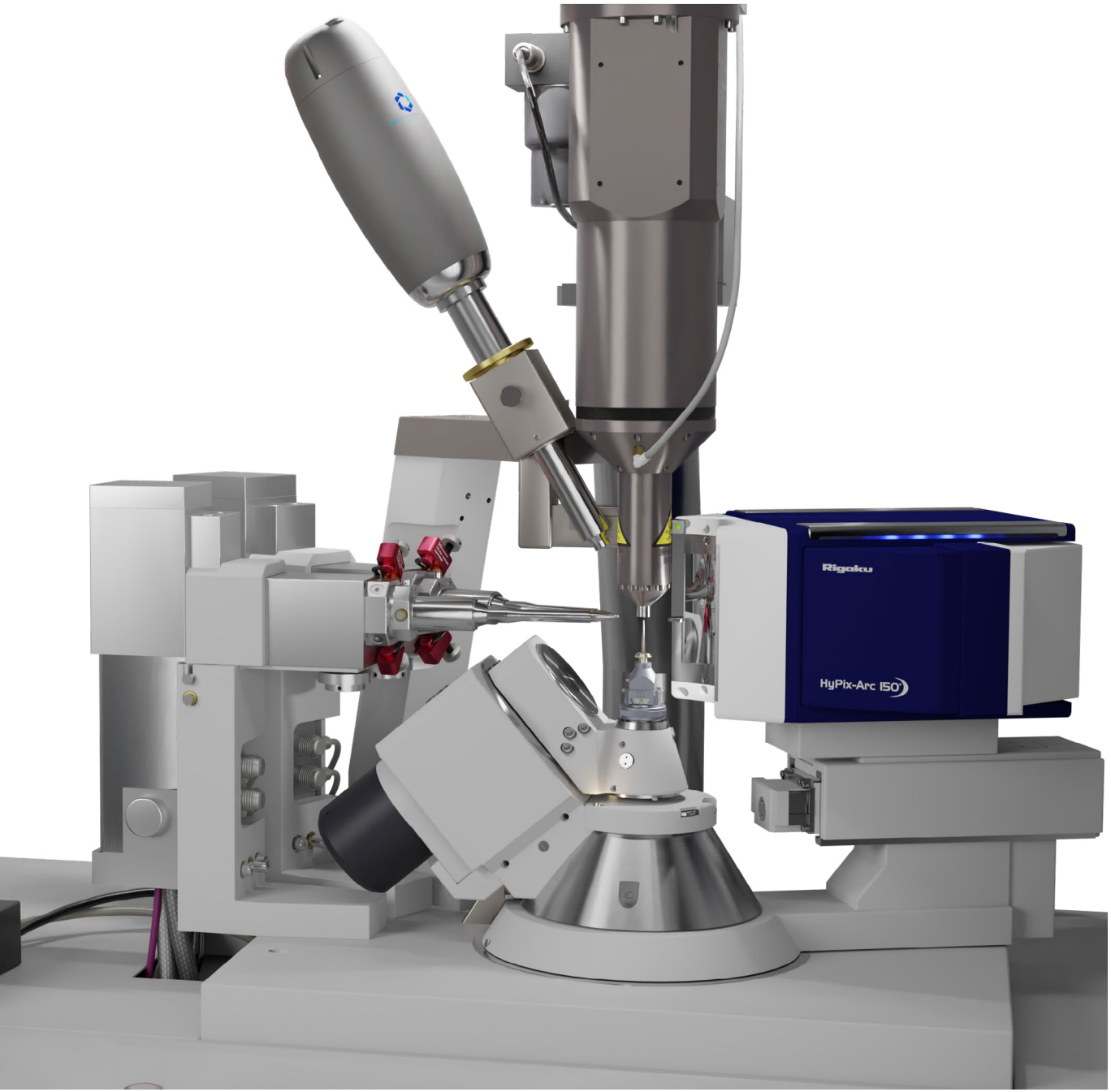
Following AAP runs, one can export a PDF report that includes images and results from the automatic analysis run. Additionally, it is easy to review past AAP runs and results. Simply select the directory and SAXSLab reloads APP content and results.

AUTOMATIC SAMPLE CHANGER

For labs that desire unattended sample mounting and data collection, the BioSAXS-2000^{nano} includes an optional Automatic Sample Changer (ASC). The ASC adds automated sample loading, flow cell washing and data collection capabilities. It supports samples supplied in 96-well plates or 0.2 mL PCR tube arrays, and seamlessly integrates with the BioSAXS-2000^{nano} system and SAXSLab software to allow easy setup of unattended or overnight experiments.

Key Features

- Flow cell for unattended sample loading from 96-well plates and PCR tubes
- Short tube distance between sample storage to measurement cell positions provides for faster loading
- Supports foil-sealed samples to ensure that samples won't evaporate prior to data collection
- Support for multiple cleaning solutions and configurable cleaning cycles
- Temperature-controlled sample storage, including an option for separate storage versus data collection temperatures



SELECTED ACCESSORIES AND ATTACHMENTS*

LOW TEMPERATURE ATTACHMENTS

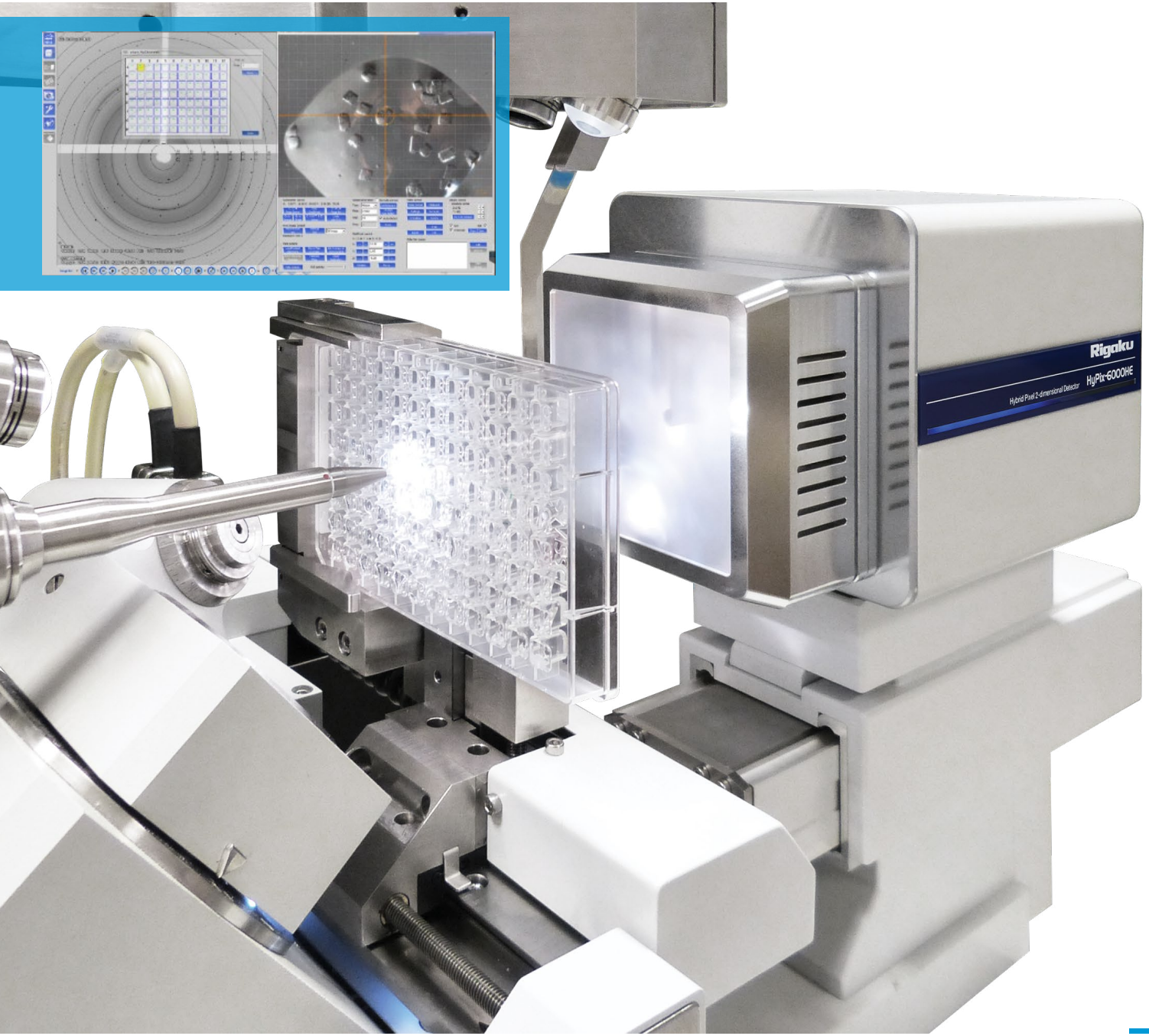
The XtaLAB Synergy platform is compatible with a variety of low temperature attachments, including popular nitrogen and helium devices from Oxford Cryosystems.

Our N-HeliX solution fits within the normal system footprint. The stand is discretely integrated into the cabinet yet is isolated from the enclosure to ensure no vibrations are transmitted to the instrument. You can also dual-mount the N-HeliX alongside a second low temperature device for flexibility.

Integrated software control of the most common low temperature devices enables automatic variable temperature experiments or simple shutting down at the conclusion of your data collection to conserve resources.

Learn More ▶

*Ask us for a full list of supported attachments



SELECTED ACCESSORIES AND ATTACHMENTS*

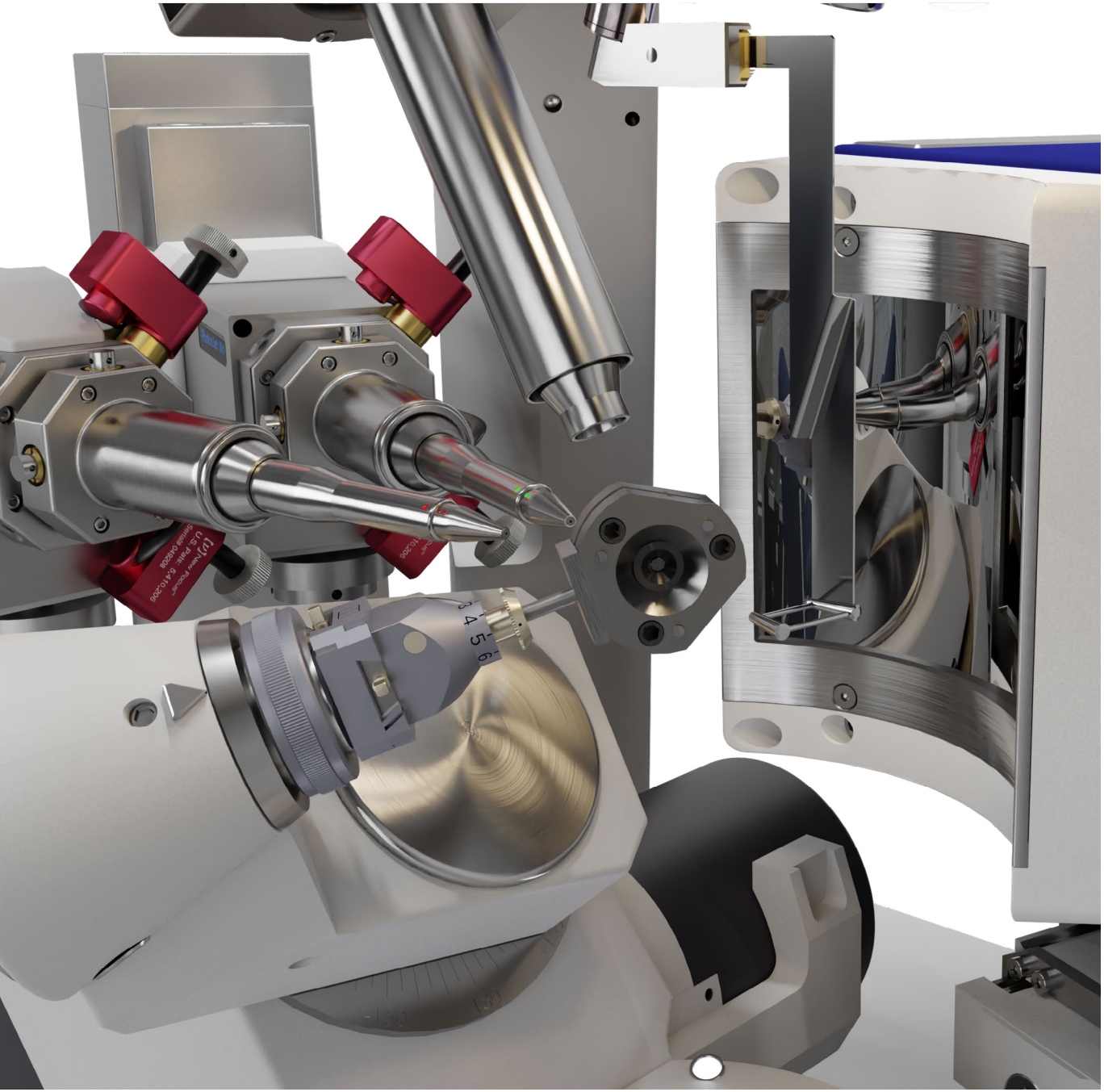
XtalCheck-S

The XtalCheck-S is a motorized screening device offering *in situ* screening of crystals or powders in crystallization plates. Queue up objects to screen with a simple point-and-click interface and let the instrument automatically screen them while you focus on other things. Fast motors traverse the entire plate quickly to make sure you can set up your scans fast and leave the system to it.

Originally designed for use in protein crystallography, it can also be applied to small molecule samples when used with solvent-resistant plates or for powder screening. The device can be attached to the instrument in under five minutes, and mounting crystallization plates is an easy one-handed operation.

Learn More ▶

*Ask us for a full list of supported attachments

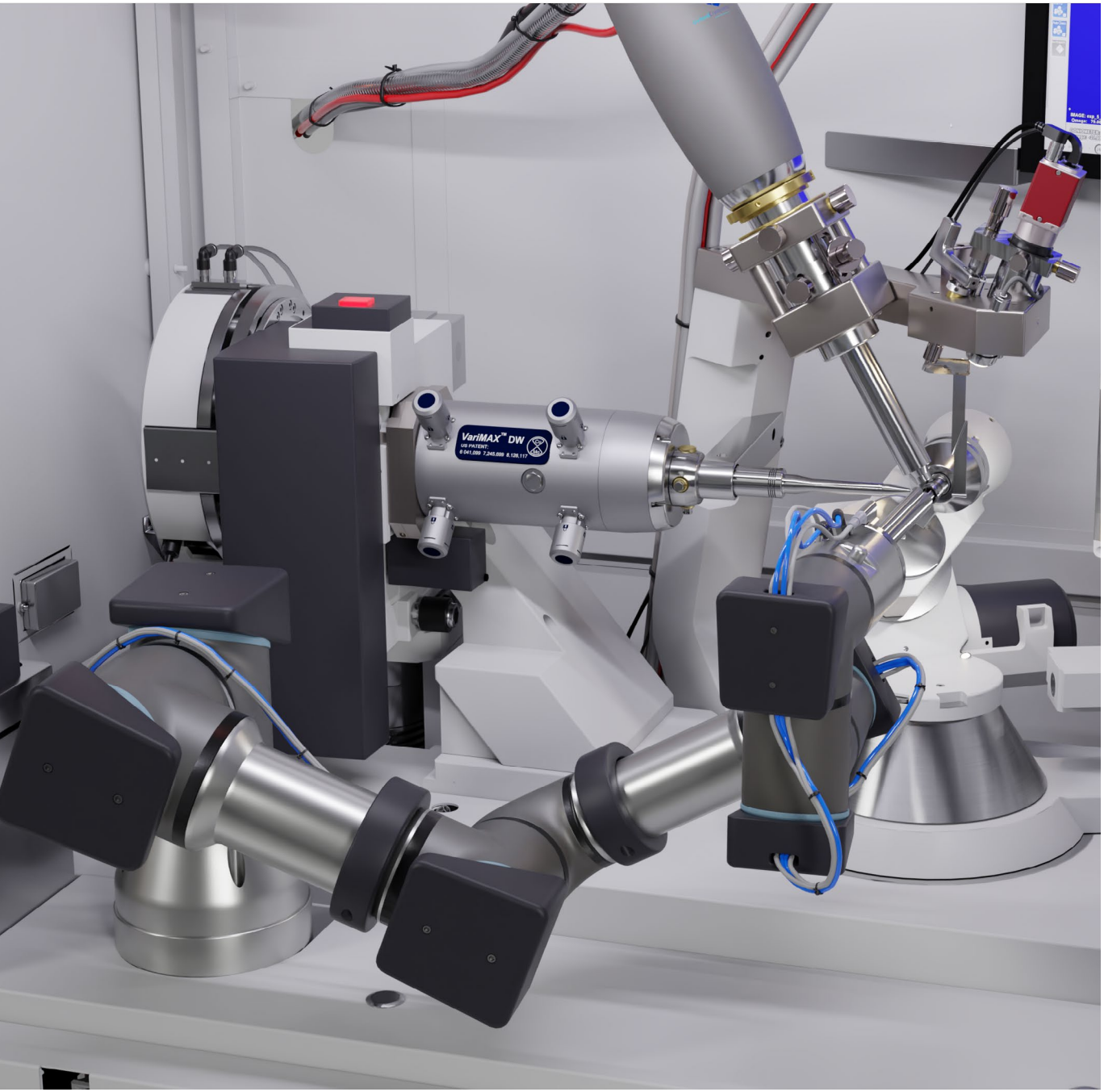


SELECTED ACCESSORIES AND ATTACHMENTS*

HIGH-PRESSURE KITS

Accommodating the vast majority of commercially available and custom high-pressure cells, the high-pressure kit creates a sample space with an 8 cm diameter. It is easy to switch between high pressure and standard mode and, with powerful high-pressure software tools to aid with data analysis and processing, high-pressure diffraction experiments have never been easier.

*Ask us for a full list of supported attachments



SELECTED ACCESSORIES AND ATTACHMENTS*

XtaLAB Synergy Flow

We know time is your most valuable commodity. A robotic sample changer can take over the repetitive tasks and let you focus on the science.

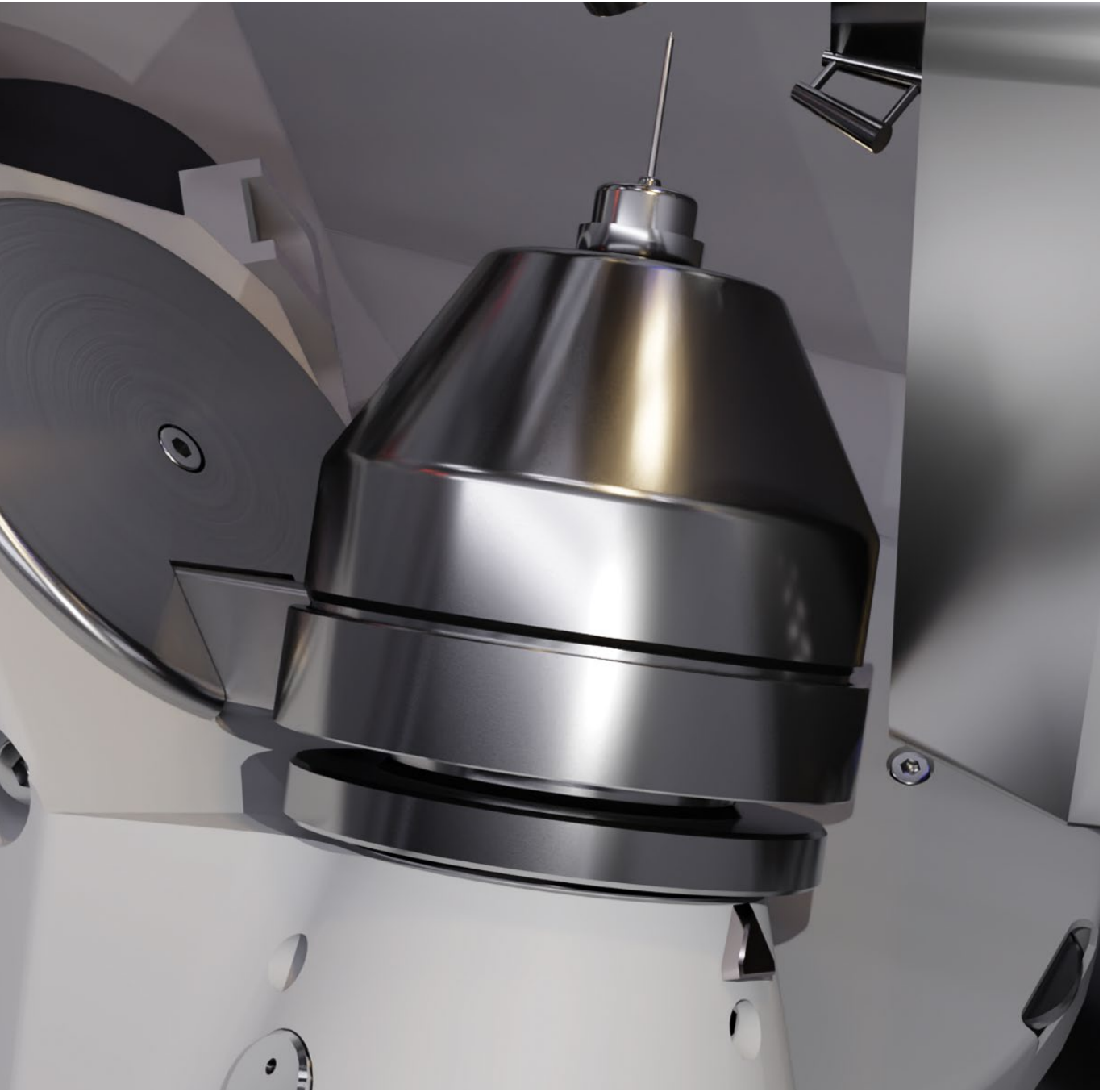
With a unique dewar drawer design that lets you continue experiments while you load samples, the XtaLAB Synergy Flow allows truly continuous operation to enhance your workflow.

Coupled with the Intelligent Goniometer Head (IGH) samples can be automatically centered in as little as 6 seconds** with <5 micron precision for automatic sample screening or data collection.

Intelligent software lets you queue up and run jobs, rank samples automatically according to your own criteria and view results in a simple easy to use interface.

Learn More ▶

*Ask us for a full list of supported attachments
**Requires dual camera setup and depends on initial mount position.



SELECTED ACCESSORIES AND ATTACHMENTS*

INTELLIGENT GONIOMETER HEAD

Our Intelligent Goniometer Head (IGH) is a motorized marvel, with a slender profile and packed with great tech. Using intelligent machine vision, samples can be automatically optically centered typically within 30 seconds but in as little as 6 seconds* and with <5 micron precision. The IGH has a built-in magnetic mount and is compatible with common pin standards such as the SPINE and ALS.

The best thing is that we packed it all into a minimal collision profile to ensure good sample access during your experiment.

Learn More ▶

*Ask us for a full list of supported attachments
**Requires dual camera setup and depends on initial mount position.

CrysAlis^{Pro}

USER INSPIRED SOFTWARE

Combining cutting-edge hardware with class-leading software results in fast, powerful diffractometers for tackling any kind of problem, from the ordinary to the extraordinary.

We believe that combining and harnessing the expertise and accumulated knowledge of not just our staff but also our customers is a winning formula. Using this approach, CrysAlis^{Pro} has been molded over the years to become one of the most highly regarded, user friendly, and complete crystallographic software packages in the world.

CrysAlis^{Pro} is a single integrated package for diffractometer control and data analysis. Automated analysis of the data can thus be conducted parallel to the ongoing data collection with near-instant experiment feedback. Novices and experts alike can feel at home using it immediately, with full automation and fully manual control built in.

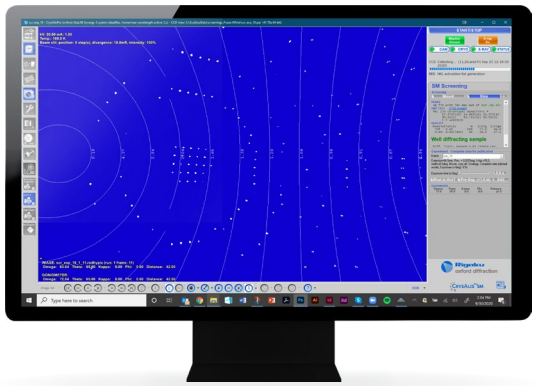
Learn More ▶

FAST RELIABLE FEEDBACK

- Unit cells typically can be determined within one or two frames and can be searched for via CellCheckCSD or a local database automatically.
- “What is This?” tool can determine connectivity in seconds, allowing you to make fully informed decisions without wasting valuable instrument time.
- A wide variety of tools are available to assist you in visualizing, identifying and solving problems quickly.

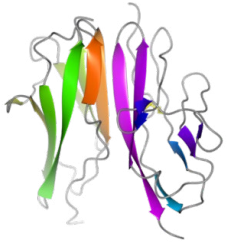
Recent Features

- 64-bit compatibility—access more memory for faster processing and handling bigger datasets
- Ewald3D—a fast 3D diffraction viewer
- More hardware support than ever before

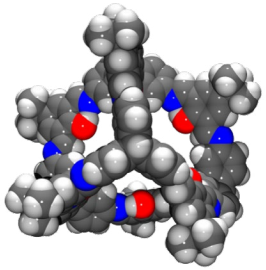


SM OR PX

We understand that the small molecule and protein communities have key differences in the way they approach the subject. CrysAlis^{Pro} contains separate workflows to fit their differing needs and approaches. Use our powerful data processing suite or export your frames for processing in an external package, it’s up to you. When installed, CCP4 is automatically recognized and CrysAlis^{Pro} can prepare data for it.



CrysAlis^{Pro}PX



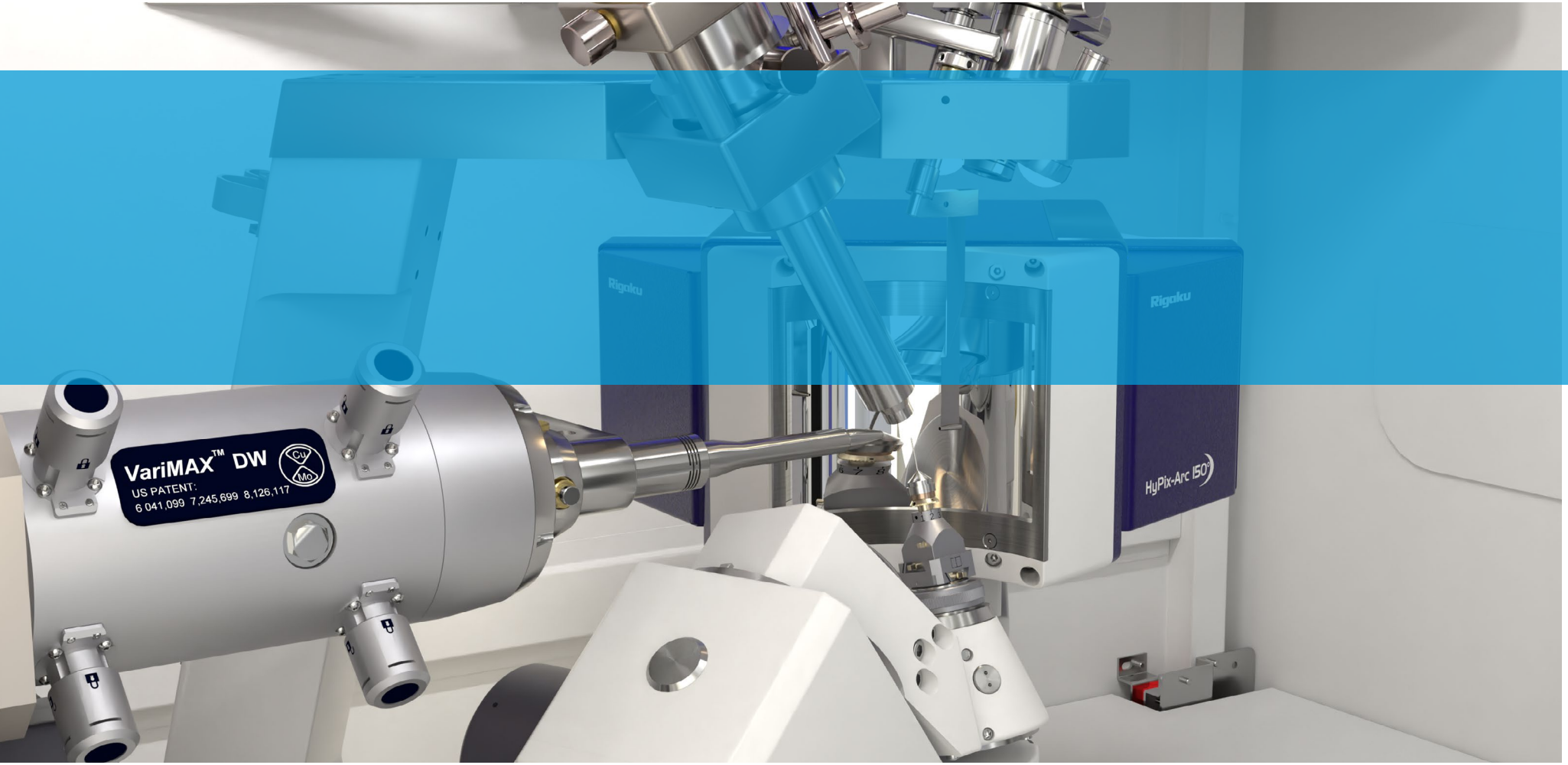
CrysAlis^{Pro}SM

Common small molecule refinement packages are also automatically detected and can be launched via CrysAlis^{Pro}, ensuring your data stays in sync.

FAST SUPPORT AND SOLUTIONS

CrysAlis^{Pro} facilitates effective remote support, both scientific and technical, with full diagnostic readouts and detailed log files for remote diagnosis and solving of issues. We often can diagnose and assist without need for a site visit, getting you back up and running fast.

Rigaku



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