

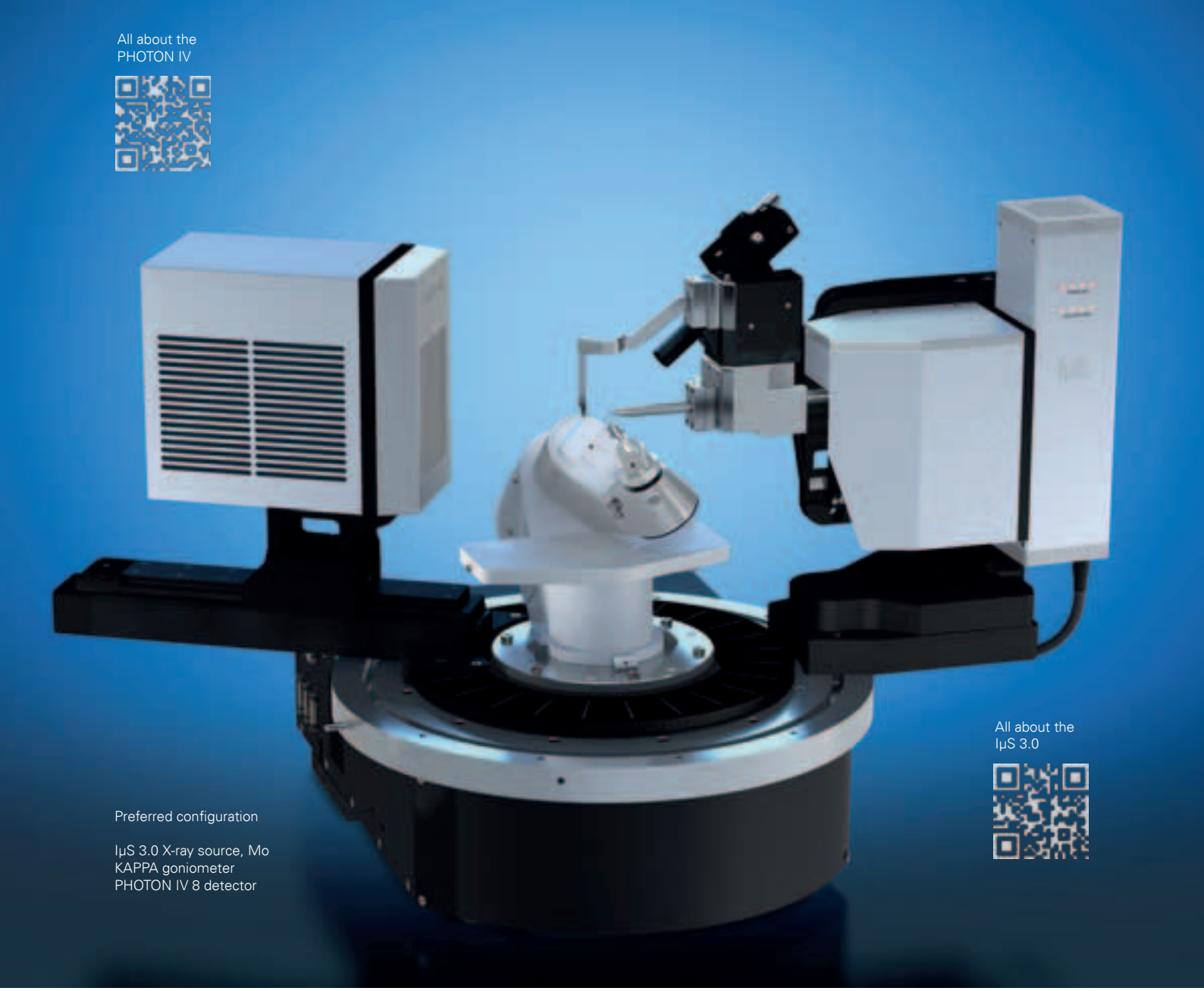
CRYSTALLOGRAPHY

D8 QUEST GX

Powerful Single-Wavelength Solution

Innovation with Integrity

All about the
PHOTON IV



Preferred configuration

IμS 3.0 X-ray source, Mo
KAPPA goniometer
PHOTON IV 8 detector

All about the
IμS 3.0

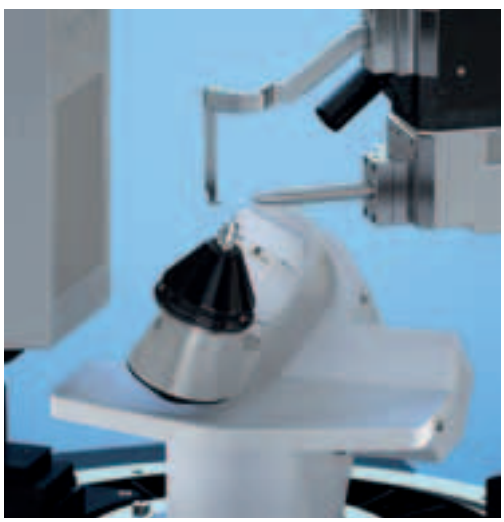


High-pressure solution

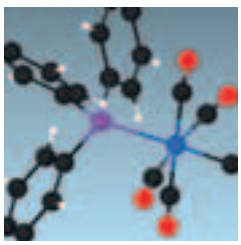
The High-Pressure Kit is compatible with most commercially available Diamond Anvil Cells (DAC). Installing the kit ensures collision avoidance and safe positioning of the DAC. Switching between standard and high-pressure setups takes just seconds.

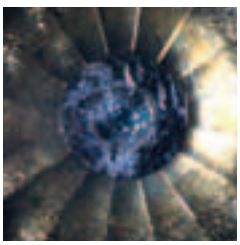
AI Crystal Centering

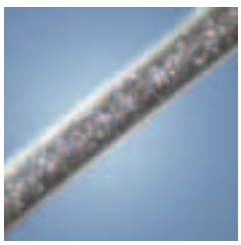
Automatically center crystals quickly to measure more samples in less time and enhance overall productivity.

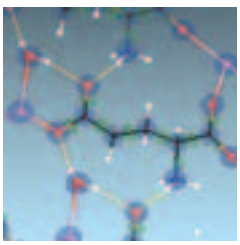


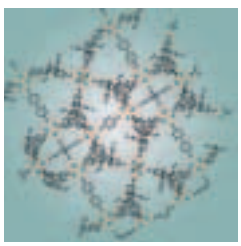
D8 QUEST GX—Workhorse Power for Modern Research

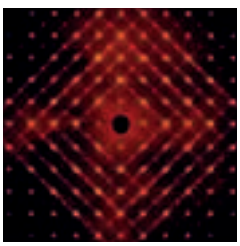

Coordination compounds

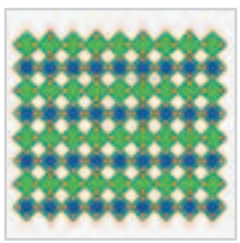

High pressure

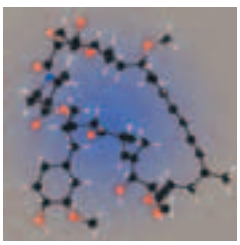

Capillary


Charge density


MOF


Total scattering


Minerals


Organic

Maximum value from a single source diffractometer

The D8 QUEST GX delivers advanced single-crystal X-ray diffraction in a compact, research-ready package—ideal for laboratories where space is at a premium.

Mo radiation for broad applications: Optimized for chemistry and materials research, Mo radiation supports everything from absolute structure determination to quantum crystallography.

Routine power for modern research: The single-wavelength D8 QUEST GX covers a wide sample range, making SC-XRD a reliable tool for routine analysis across most fields of research.

Consistent success: The IμS 3.0 source with Mo radiation provides the ideal energy for revealing structures of diverse samples.

Faster data collection: The large area PHOTON IV enables the efficient collection of complete data with higher multiplicity for better data.

Small crystals, big results: Superior structure determination, even from tiny or weakly diffracting samples—thanks to the brilliant IμS 3.0 beam and photon-counting PHOTON IV detector.

Accessible for all: The intuitive APEX software suite streamlines experiment setup and data reduction, making advanced crystallography accessible to beginners and efficient for experts.

D8 QUEST GX—the compact and powerful system for your laboratory. Get the best possible data from every crystal.

Mo radiation—the single source advantage:
Mo radiation covers a broad range of applications from solid state to organics thanks to its superb balance of low absorption and strong scattering. That's why most published crystal structures rely on this wavelength.

Engineered for crystallography: IμS 3.0 sources are purpose-built for crystallography, delivering a highly brilliant X-ray beam with over four times the intensity of conventional microfocus sources.

Maintenance-free design: Air cooling eliminates issues like corrosion, algae, and leaks—no water required. HELIOS MX optics are hermetically sealed under helium for zero maintenance and maximum reliability.

Exceptional beam stability: The source and optics are fixed on an optical bench, providing unparalleled stability and intensity of the primary beam, eliminating the need for realignment and consequent downtime.

Proven reliability: With over 1,700 sources used by crystallographers worldwide, the IμS sets the standard for performance and reliability.

Superior results: These innovations deliver high X-ray intensity, stable performance, and reliable results—enhancing research efficiency.

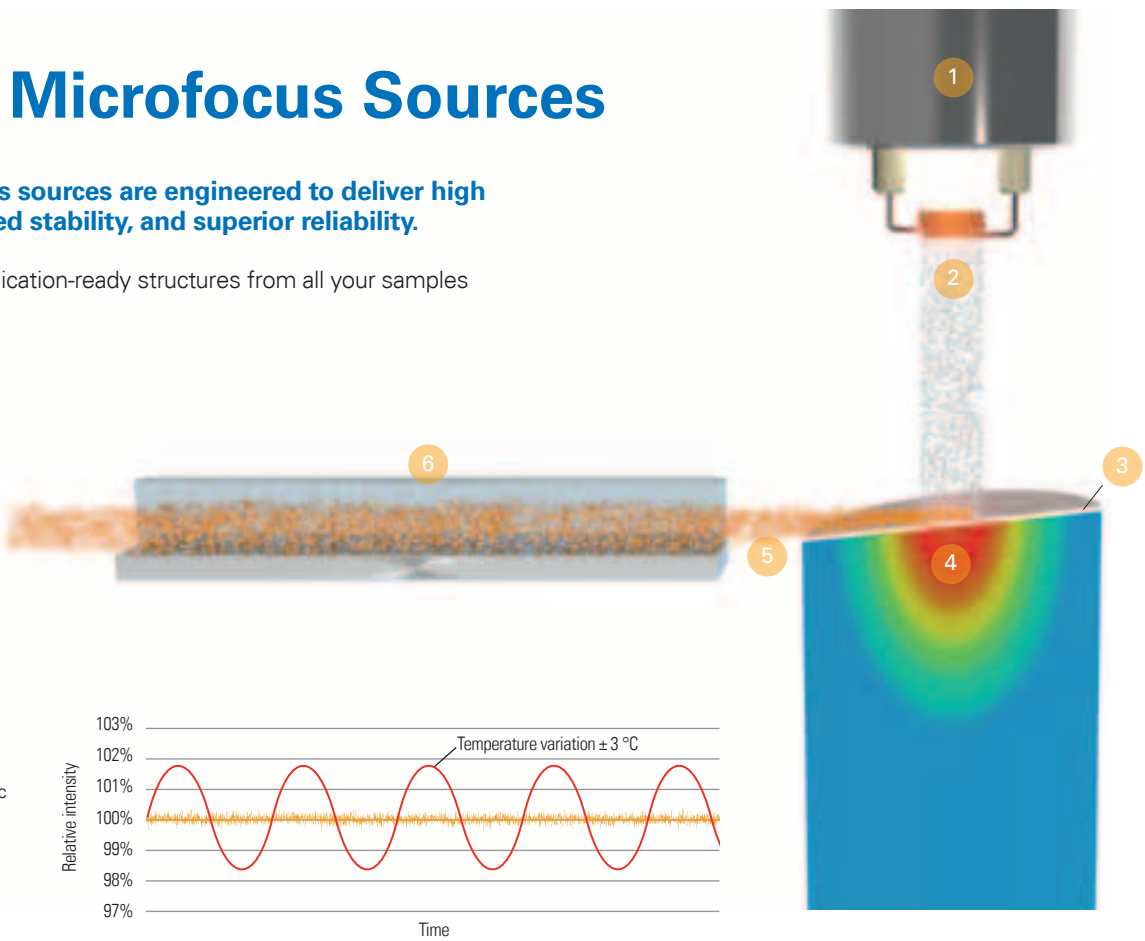
X-ray wavelength [K_α]	Ag	Mo	Cu
Quantum crystallography			
High pressure			
Strong absorbers			
Solid state / intermetallic			
PDF			
Inorganic compounds			
Minerals			
Coordination complexes			
Powder			
Supramolecular / MOF			
Organic			
Light atom absolute configuration			
Proteins			

Best

IμS 3.0 Microfocus Sources

IμS 3.0 microfocus sources are engineered to deliver high intensity, sustained stability, and superior reliability.

Achieve reliable, publication-ready structures from all your samples with Mo radiation.



1. Air-cooled source with long-life filament
2. Electron beam
3. Anode take-off angle optimized for crystallography
4. Microfocus technology enables efficient 3-dimensional heat transfer
5. High intensity X-ray beam
6. HELIOS MX optics providing a monochromatic beam with minimized background

PHOTON IV 8 Detector

PHOTON IV offers superior data and uniquely exploits advanced indirect detection to achieve the highest DQE for all home X-ray source wavelengths

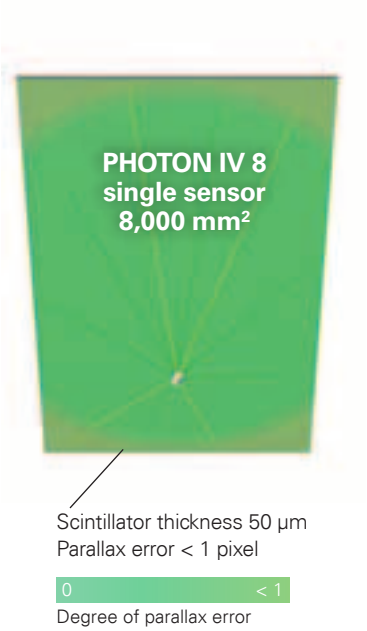
Large area: The PHOTON IV 8 detector features a large, monolithic active area with no insensitive regions, enabling fast acquisition of atomic-resolution data.

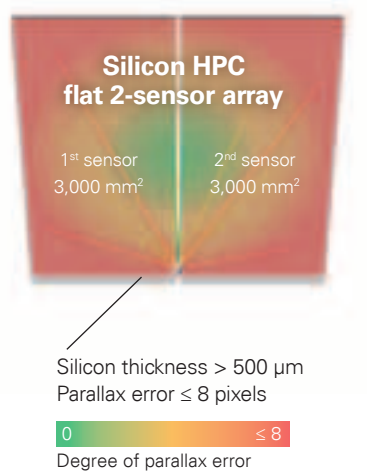
Photon-counting: Fourth-generation CMOS sensors enable true photon counting and a wide dynamic range by minimizing noise with high-frequency pixel sampling. This ensures both the weakest and strongest intensities are measured accurately and simultaneously.

Superior quantum efficiency: The PHOTON IV's custom rare-earth scintillator delivers superior Detective Quantum Efficiency (DQE) for Mo radiation. This ensures shorter measurement times, exceptional data quality, and accurate structures for diverse research needs.

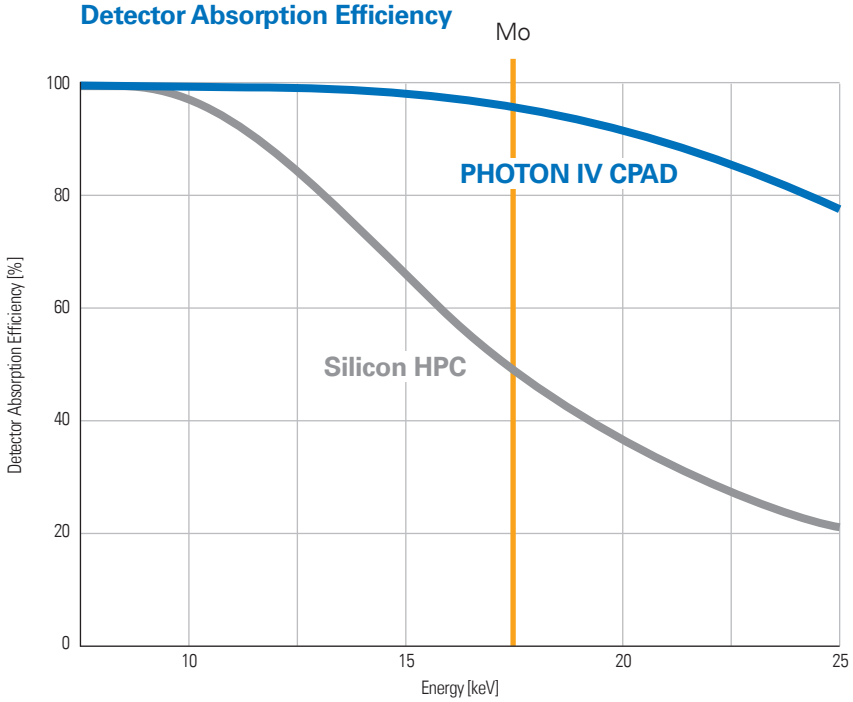
'No parallax': This is one of the secrets which allows the use of the flat, large active-area PHOTON IV detector at short detector distances with unbeatable data collection efficiency.

Comparison of PHOTON IV CPAD and Silicon HPC



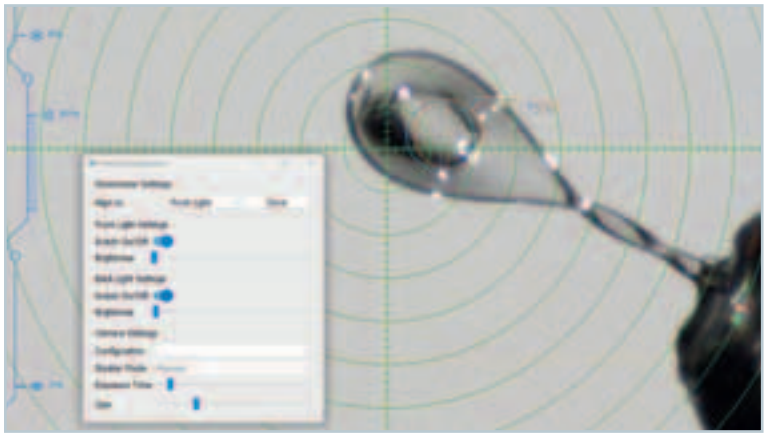


Detector Absorption Efficiency



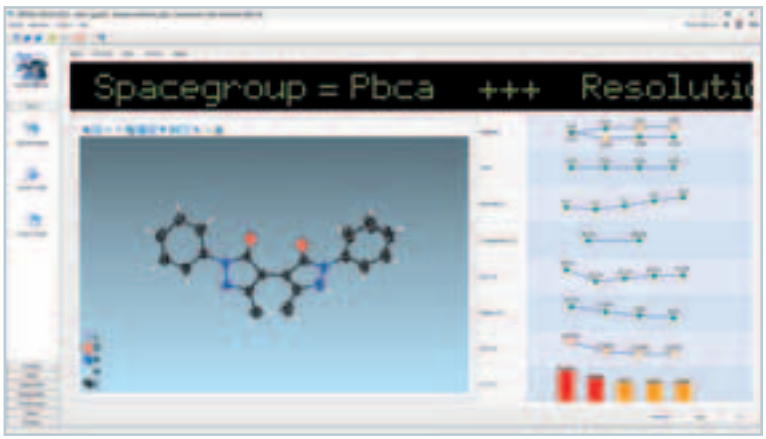
Fast and reliable crystal AI centering

Crystal AI Centering boosts productivity, enabling users—novice or expert—to complete more experiments in less time.



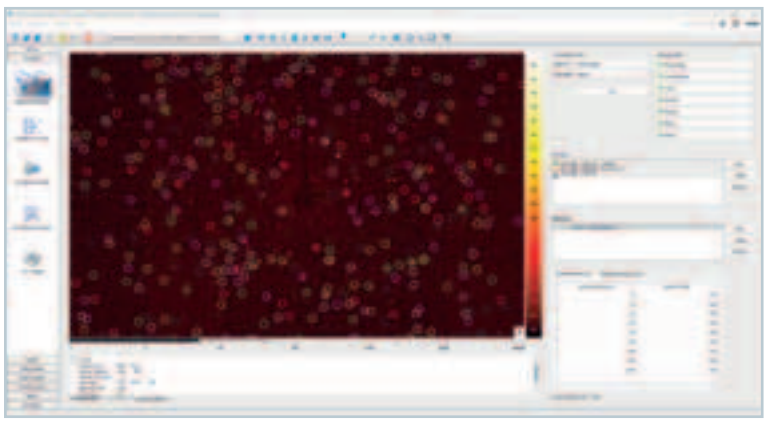
Automated Structure Determination

STRUCTURE NOW enables chemists to routinely solve 3D atomic structures without extensive training. Intelligent algorithms automate refinement, molecular graphics, report generation, and streamline data collection—saving time and improving quality. Users can choose between smart automation or manual control.



Advanced twin handling

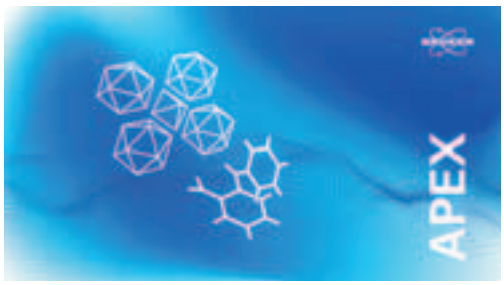
APEX automatically identifies and manages twinned crystals, guiding users through detwinning and refinement for accurate, reliable results—even with complex datasets.



Final CIF management

The FinalCIF plug-in compiles essential crystallographic data and validation checks, generating clear, submission-ready reports with minimal manual editing—ideal for routine documentation or high-impact publications.





APEX Software— Fast, Powerful, and User-Friendly!

APEX is celebrated for its speed, power, and user-friendly design. The software has been updated to further enhance ease of use, education, and automation, while offering more advanced functionality for expert users. APEX supports every step of the workflow, from instrument control to refined structure publication.

The one-click installer simplifies setup by automatically checking for previous versions and updating as needed, while offering enhanced functionality, free upgrades, and demo licenses. Its scientific database interface connects with both local and online structure databases, providing automatic search and additional filters for ease of use.

AI Centering uses deep learning to automatically center crystals in real time, regardless of crystal type, instrument configuration, or lighting conditions.

High-pressure experiments are straightforward, with automatic component recognition, collision avoidance, and powder ring exclusion. Dynamic image masks and "best-plane" background treatment ensure optimal data during integration.

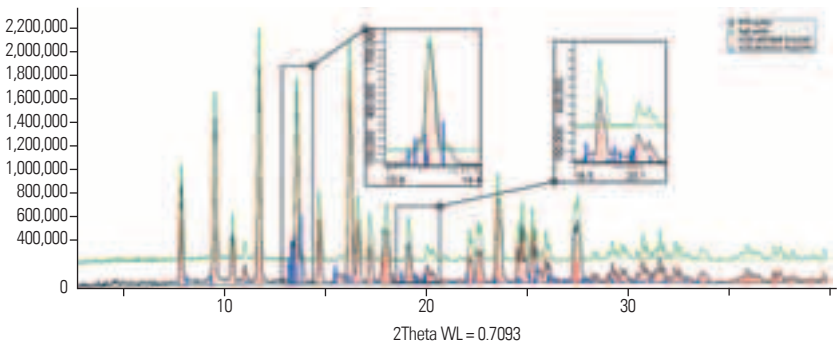
The CIRRUS cloud-based service enables sample submission and results dissemination, making it ideal for institutional analytical services, with direct import and export of data to and from APEX.

This comprehensive suite of features makes APEX software a robust tool for crystallographers, suited for both novice and expert users.



DIFFRAC.EVA—Complement your Cu-based XRD system

The brilliant IμS 3.0 X-ray beam paired with a PHOTON IV detector is an excellent combination for powder measurements on small sample quantities. With this setup, the D8 QUEST GX supports a broader range of experiments, including fast phase identification, high-pressure powder measurements and μPDF analysis. APEX interfaces directly with DIFFRAC.EVA to ensure easy and efficient data processing.



Features and Benefits

	Main characteristics		
D8 QUEST GX System	The compact D8 QUEST GX system is the ideal choice for both research laboratories and crystallographic service facilities. It consistently delivers high-quality data from the wide range of samples found in cutting-edge research. Perfect for small crystals, the bright IμS 3.0 microfocus source and the high-precision KAPPA goniometer ensure optimal performance. The photon-counting PHOTON IV detector has excellent quantum efficiency for Mo radiation, while the APEX software suite streamlines operation and provides real-time feedback.		
	Feature		Benefit
IμS 3.0 Source	Microfocus Source specifically designed for single crystal X-ray diffraction	Mo radiation recommended Also available with Cu or Ag radiation	Short measurement times and excellent data from challenging samples. Mo radiation delivers highest versatility for a single source system
	Active air-cooling design, highest reliability	3-year warranty > 5-year typical tube lifetime	Minimal maintenance, no water corrosion, minimal wear
PHOTON IV Detector	Photon-counting pixel-array detector	4th generation pixel-array detector technology	Higher speed and sensitivity, best data quality
	Small pixel size [μm²]	100 × 100	Higher resolution
	Large active area [mm²]	111 × 72, ~8,000	Faster data collection
	Readout frequency [Hz]	112	
	Count rate [counts·pixel⁻¹·sec⁻¹]	Up to 4 × 10⁶	
	Dead time [sec]	0	
	No dead areas	Single, monolithic silicon sensor	Improved data quality
	No charge-sharing noise	0 electrons charge-sharing noise	
	Parallax [pixel]	< 1	
	Count-rate nonlinearity, before correction [%]	< 1	
	Detector absorption efficiency [%]	Ag 92, Mo 99	High Detective Quantum Efficiency (DQE)
	No operating gas or cooling water	Completely sealed design, air cooled	No maintenance, high uptime
	High reliability	3-year warranty	
D8 Goniometer	Sphere of confusion [μm]	< 7	Best data quality
	High speed [deg min⁻¹]	Up to 3,000	Faster data collection
	Kappa geometry [deg]	-183 … +183	Highest experimental flexibility
APEX Software	The most comprehensive software package for single crystal X-ray diffraction (SC-XRD), utilizing well-tested, first-class algorithms. It offers a user-selectable level of automation, catering to both novices and providing complete control for experienced crystallographers. With state-of-the-art responsiveness, it incorporates user feedback from hundreds of installations. The software features unparalleled twin handling, boasting the most powerful reciprocal lattice viewer to address all crystallographic challenges. Additionally, it includes first-class interactive model-building, refinement and publication tools.		

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