



Product Sheet SC-XRD 501

D8 QUEST ECO

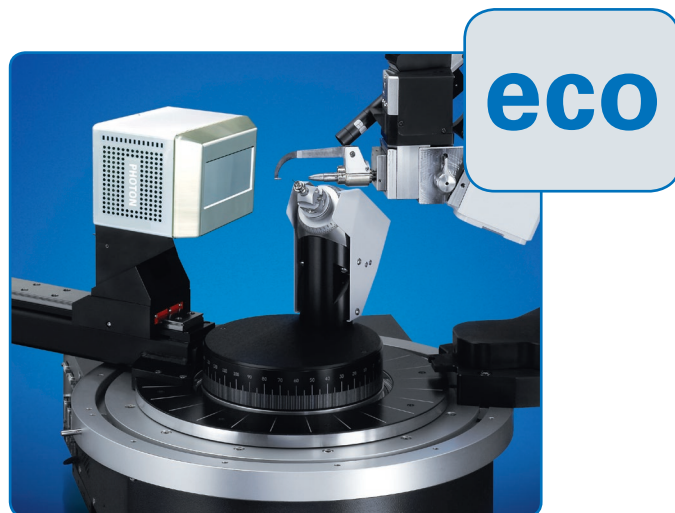
- Full Experimental Flexibility and Performance with Minimized Installation Requirements

Combining full experimental flexibility, high performance, and ease-of-use with minimal installation requirements, reduced maintenance, lower cost of ownership and power consumption might seem like trying to square the circle. However, with carefully designed new system components, Bruker has mastered this challenge and is proud to introduce the improved D8 QUEST ECO. The D8 QUEST ECO features the new PHOTON II 70

CPAD detector. The system is easy to use and delivers excellent data quality but at the same time addresses the rapidly growing demand for environmental awareness and protection of resources, such as water and electricity. This configuration helps save 1,700 m³ of cooling water and 38,000 kWh of electrical power when compared to a standard sealed tube system.

Features

- PHOTON II 70 CPAD technology – more than two times larger sensor compared to competing HPC detectors
- More than 2.5 more sensitive to Mo radiation compared to HPC detectors
- Shutterless mode for unprecedented Acquisition Speed and Data Quality
- High intensity X-ray source for Mo- or Cu-radiation –no external cooling required
- Large enclosure with ample of work space
- APEX3 software suite – the must have for crystallography
- 3-year warranty on PHOTON II 70 detector and X-ray tube
- 10-year warranty on the goniometer



D8 QUEST with PHOTON II 70 Detector

PHOTON II 70 CPAD technology – more than twice the sensor size

Charge-Integrating Pixel Area Detectors (CPADs) feature the most advanced detector technology available. With an unprecedented combination of large active area, quantum-limited sensitivity, and high speed, the PHOTON II 70 delivers more than twice the active area and more than two and a half times the sensitivity for Mo radiation compared to HPC sensors offered by the competition. CPAD technology is the perfect solution for high-performance crystallography.

Additionally, zero-maintenance CPAD sensors do not suffer from charge sharing or count rate saturation data loss. The PHOTON II 70 handles strong reflections much better which significantly improves low-resolution data quality.

Unprecedented Acquisition Speed and Data Quality

The PHOTON II 70 detector is operated in shutterless mode and continuous scan mode. Paired with the larger sensor size and higher sensitivity data sets can be acquired about five times faster. Comparing similar wall-clock times, data quality is significantly improved with the PHOTON II 70 compared to HPC systems.

Three-Axis Goniometer

Our high-precision 3-axis goniometer enables fast data collection with maximized efficiency. The crystal can be rotated around the omega and phi axes allowing complete coverage of reciprocal space for complete data sets. The Chi axis is fixed at 54.7 degrees – the Magic Angle at which data are collected most efficiently.

Best Hardware + Best Software = Best Structure

The best in class APEX3 software guides you through the complete experiment with minimal input and maximum graphical feedback, and allows you to focus on the structure determination at hand. The graphical user interface keeps you informed about the progress and quality of the structure determination process and has been optimized using

extensive customer feedback.. Underlying engines for data acquisition, unit cell determination, data integration, and scaling utilize the world's best algorithms producing superior data and structures. Benefit from built-in expert knowledge about instrument geometry and data collection strategies.

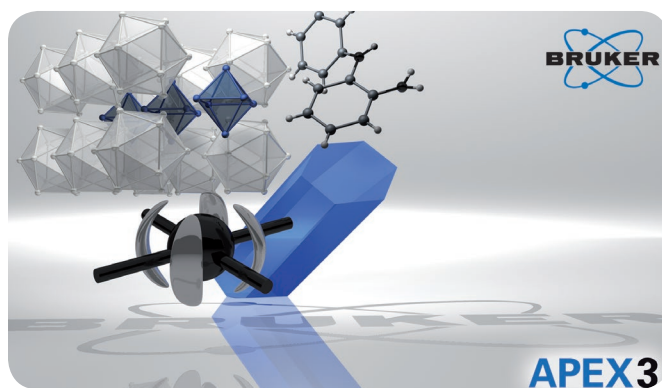
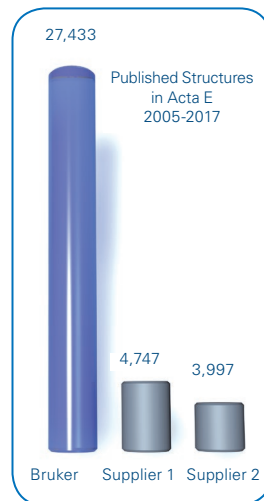
XPRESSO - Automation at its Finest

The XPRESSO automation plugin is a great tool for both expert crystallographers and also users that are less familiar with single crystal diffraction systems. XPRESSO offers a running start and drives the complete experiment – fully automated. You mount the crystal, you start XPRESSO, and we provide the completely refined structure. XPRESSO is also a great help for experienced crystallographers, who are often overwhelmed by an enormous workload. While ordinary structures often do not pose a crystallographic challenge, the sheer number of crystals to be handled prevents crystallographers from focusing on challenging problems. XPRESSO is the best means to free time for focusing on crystallographic challenges.

Flexibility for the future

The flexibility of the D8 QUEST ECO helps you to protect your investment. If your experimental requirements change in the future the D8 QUEST ECO can be upgraded with a number of high performance source and detector options including the μ S microfocus source and the PHOTON III detector.

Supplier search results Acta Crystallographica, Section E
 Search terms:
 Bruker OR Siemens OR
 Nonius NOT (Bruker
 Nonius OR Bruker-Nonius)
 Kuma OR Oxford Diffraction OR Varian OR
 Agilent
 Rigaku



eco

We have designed the X-ray source and the PHOTON II 70 detector with economical and ecological principles in mind. Both feature low energy consumption and do not need water cooling. These benefits significantly reduce the cost of ownership and also improve reliability.

These cost savings come with no compromises. ECO configurations also feature very high performance.

- Low energy
- + No water supply
- + Low maintenance
- = ECO

saves
33 t of CO₂
 per year



No External Cooling Water

- Air cooled PHOTON II 70
- High Intensity X-ray source
- No external chillers required

saves
1,700 m³
 cooling water
 per year



Single Phase Power


- Ultra-low power consumption of the PHOTON II 70
- High intensity X-ray source for excellent system efficiency

saves
38,000 kWh
 electrical energy
 per year

Technical Specifications		
D8 QUEST ECO	Exterior dimensions	187 × 130 × 114 cm (h × w × d) 73.5 × 51.2 × 44.7 inch (h × w × d)
	Weight	750kg ¹⁾
Detector	PHOTON II 70	
	Active area Cooling Sensor format [pixels] Pixel size [microns] Quantum gain [electrons] Operation mode Warranty	70-cm ² CMOS Sensor Air-cooled 768 × 512 135 261 (MoK α) 119 (Cu K α) shutterless data collection 3 years
X-ray source	Available wavelengths Cooling water supply Power supply	Copper, Molybdenum No external cooling required Single-phase: 208 to 240 V, 50/60 Hz
Goniometer	2theta, omega	
	2theta angular range ¹⁾ Omega angular range ²⁾ Speed Accuracy Reproducibility Crystal-detector range ²⁾ Warranty	better than -148° to +159° -270° to +270° 0.00°/min – 1200°/min 0.005° 0.0002° 35 – 240 mm 10 years
	FIXED-CHI Stage	
	phi angular range chi Speed Accuracy Reproducibility Sphere of confusion (Stepper motor with optical encoders)	n × 360° 54.7° (Magic Angle) 0.00°/min – 1,500°/min 0.025° 0.001° < 7 μ m
Software		APEX3 software suite including SHELXTL
Low-Temperature Device (optional)	CRYOSTREAM 800	Temperature range 80 K – 400 K

¹⁾depending on configuration and accessories

²⁾depending on accessories and detector position

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