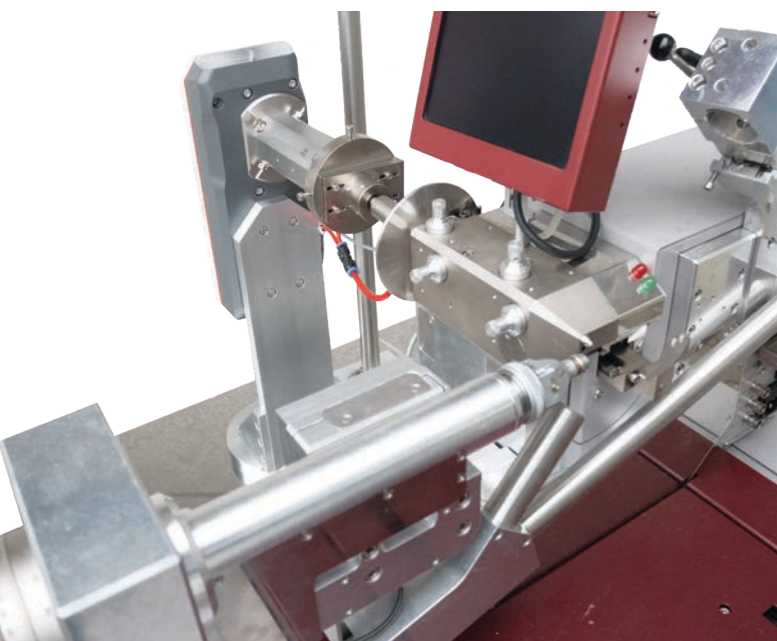


SPECIFICATIONS

X-ray source:	marμX^{3G} micro-beam 50 kV / 1.00 mA (Primux 50 by Anton Paar)
Optics:	AXO multi-layer optic with 15 cm mirrors
Beam size at sample	< 160 μ m x 160 μ m FWHM
Beam divergence	< 7.5 mrad
Anode cooling	Closed circle water cooling
Mirror protection	Diaphragm vacuum pump with interlock to shutter
Detectors:	
Image plate detector	mar345_S with 9 to 68 seconds read-out time
Pixel detectors by DECTRIS:	EIGER2 R 4M, EIGER2 R 1M, PILATUS3/4
Goniometer:	mardtb multi-purpose goniometer with automatic X-ray beam alignment and continuous monitoring of the primary beam intensity
Options	Built-in motorized goniometer head, easymount sample changer
Cryo-cooler:	Oxford Cryostream 1000 liquid nitrogen system with marLiN_2 auto-refill system
Experimental table:	Stainless steel magntic table top and aluminum table frame 1700 mm x 1000 mm x 800 (w:d:h)
Options:	Radiation enclosure with sliding doors and shutter interlock system



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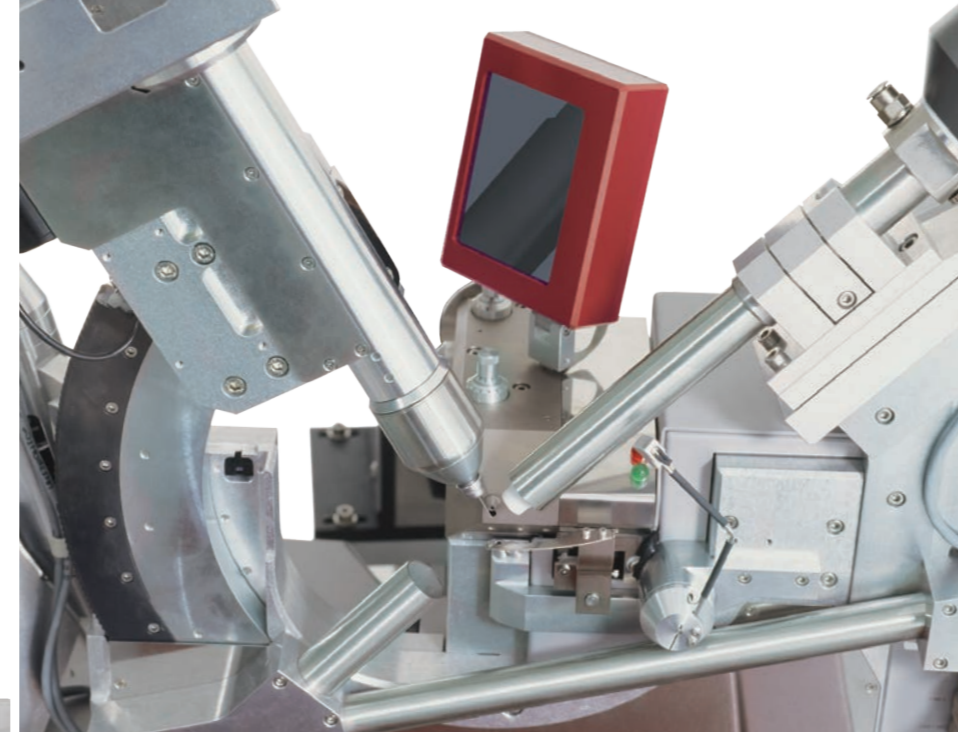
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 **marXperts**

mar μ X^{3G}

Next generation
turn-key system
for X-ray crystallography





marµX^{3G} is the third generation of our complete turn-key system for X-ray crystallography. It delivers twice as many usable X-ray photons as compared to the previous generation and narrows the gap to modern rotating anodes. **marµX^{3G}** consists of the **marµX^{3G}** micro-beam X-ray generator operating at 50 Watts with a closed circuit water cooling unit. It is equipped with a state-of-the-art multi-layer optic producing a spot size at the sample of appr. 160 µm x 160 µm. Further, it features the **mar345 S** image-plate detector or the entire range of DECTRIS laboratory detectors of the EIGER2 and PILATUS series, the well known **mar dtb** goniostat and an Oxford Cryostream low temperature unit with an automatic refill system. The full system is integrated in a functional and stable table with plenty of space for all electronics and attachments.

marµX^{3G} is modular built and can easily be extended with the semi-automatic **easymount** sample changer. Optionally, a table top radiation enclosure is available.

IMPRESSIVE PERFORMANCE

It has been shown that the **marµX^{3G}** system operated at only 50 Watts produces data comparable to high-powered rotating anode systems operated at 1200 Watts or more. This is possible thanks to a thorough optimization of all involved components. In a test using lysozyme crystals it was possible to collect data of good enough quality for sulfur-SAD-phasing¹ using only 90° of data.

A direct comparison between the **marµX^{3G}** system and a rotating anode generator using the same experimental conditions (same crystals, exposure times, detector, etc.) revealed that small crystals produce superior data with the **marµX^{3G}** system while the results for larger crystals are virtually identical².

EFFICIENT SAMPLE SCREENING

Typical usage of home laboratory equipment is crystal screening. The superb brilliance of the beam of the **marµX^{3G}** source in combination with the extremely low noise read-out of the fast **mar345 S** image-plate detector allows for fast screening of diffraction power of your samples - even if they are getting very small. For even faster screening, consider an EIGER2 or PILATUS pixel detector.

MULTI-PURPOSE INSTRUMENT

The **marµX^{3G}** system can be used for a wide variety of X-ray applications, among others:

- single crystal macromolecular crystallography
- single crystal small molecule crystallography
- powder diffraction
- textures
- diffuse scattering
- high-pressure crystallography

Depending on its primary usage, the X-ray source can be equipped with Cu-, Mo- or Ag-anode.

Available for download at www.marxperts.com:

- 1) Application Note AN260107
- 2) Application Note AN070207



LOW RUNNING COSTS

Since the utilized power of the X-ray source is low (50W) the tube is cooled by a closed circuit water cooler. The necessary cooling of the anode is accomplished through a highly efficient fan - like the CPU in a PC.

Electrical power requirements are also extremely low. The complete system can be run from a standard single-phase 220/110 V wall socket with a 16A fuse.

No need for costly water and electrical installations in the X-ray lab.

Both the source and the detector are Ethernet controlled. This ensures flexibility in the placement of the computer. Only one single Ethernet cable between the PC and the **marµX^{3G}** is necessary.