

Beam delivery system GeniX^{3D} Cu High Flux



Fig. 1: Beam delivery system head and control unit

The GeniX 3D platform is a new X-ray beam delivery system with increased beam brightness and further improved ease of use. The GeniX 3D Cu HF is the model for protein crystallography and diffraction analysis on samples of few tens up to few hundred microns. This system provides a high useful flux on a rather small spot for improved diffraction data quality or reduced measurement time in particular for small crystal analysis.

The GeniX 3D Cu HF integrates a higher brightness X-ray tube coupled to aspheric single reflection multilayer optics (FOX3D) having an increased capture angle. The resulting X-ray beam benefits are an increase of total flux and a smaller focal spot compared to first generation of low power microfocus systems. This results in a significant improvement of the signal to noise ratio on small or weakly diffracting crystals, without compromise for large crystals.

The GeniX 3D is in the tradition of the well known GeniX platform in terms of high reliability, high stability and low maintenance making it a high performance system with low cost of ownership. The new GeniX 3D platform implements intuitive alignment concepts for further simplified integration on every type of diffractometer and easy access for a large community of users.

Fig. 2: High resolution CCD pattern of beam at focus position. Box size is 1 x 1 mm². FWHM = 170 μm.

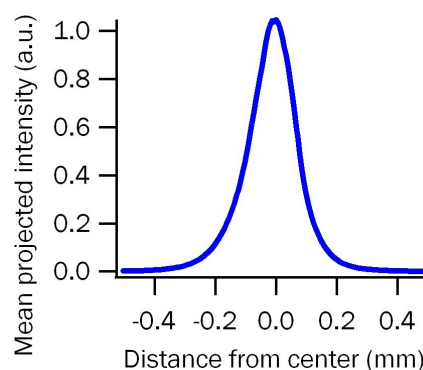


Fig. 3: X-ray horizontal beam profile of the spot (fig.2).

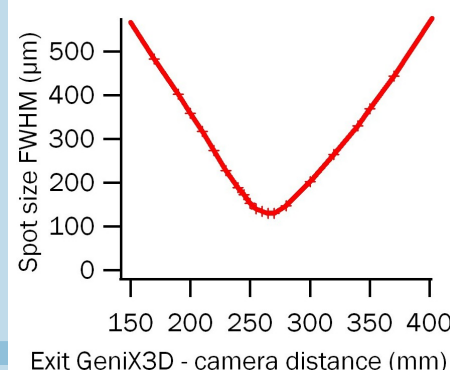


Fig. 4: Focusing curve (FWHM).

Applications

- protein crystallography
 - high throughput screening
 - small crystal analysis
 - structure determination
- powder diffraction
- x-ray diffraction

Benefits

- improved brightness
- improved flux density
- extremely stable beam
- compact system, easy to integrate
- low power and low maintenance source
- smart source power management
- intuitive interface

Options

- configurable collimator system
- software utility for remote operation

Accessories

- alignment camera
- beamstop
- collimator
- pindiode detector
- dry vacuum pump
- water to air chiller

Preliminary Technical Data

Subject to technical changes without notice

Beam features

• Wavelength	1.54Å / 8 keV (Cu Kα)
• Integrated flux (vacuum, 30W-50KV-0.6mA source)	> 400 x 10 ⁶ photons/sec
• Flux within 100μm (in vacuum)	>80 x 10 ⁶ photons/sec
• Divergence	~ 6mrad FW20%M both planes
• Spot size at focus (30W/40μm FWHM source)	<190 μm FWHM
• System output to focus	~240 mm (without collimator)

Electronic

• Dimensions	3U — 19" — 600mm in depth
• Total weight	13.6kg
• Power	110/220 V (AC)

Head

• Dimensions (LxWxH)	24 x 12 x 37 cm ³
• Total weight	Maximum 14.5Kg

Integration

• System power consumption	150 Watts
• Remote control features	Ethernet port & Software
• System shutter	Safety shutter
• Cooling flow rate (closed loop)	>1.0l/min (set point 25°C)
• Dry vacuum pump	Working pressure: 3mbar Pump speed: 0.6m ³ /hr

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