

Focusing multilayer optic FOX3D CU 21_21HC



The FOX3D CU 21_21HC is a new optic by Xenocs that uses the latest progress in manufacturing technology to achieve an unprecedented collection angle and improved beam focusing.

It features a precision ellipsoidal substrate that is rendered reflective over almost 180° of revolution by a state-of-the-art multilayer coating that satisfies Bragg's Law for Cu K α radiation at every point on the optic. Its high precision aspheric shape allows for large sagittal collection and convergence angles, resulting in higher flux per unit angle within a 4 degree range compared to competing solutions. It also produces a very small focal spot when coupled with a micro focus source. The combination of its single reflection geometry and the precision multilayer coating results in a very high transmission efficiency of monochromatic radiation.

Slits can be easily mounted on the optic to optimize resolution (limit convergence) and due to the high flux density still obtain an intense beam for the measurement.

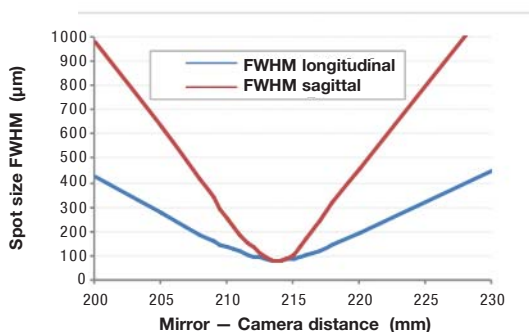


Fig. 1: Full beam focusing curves in longitudinal and sagittal directions

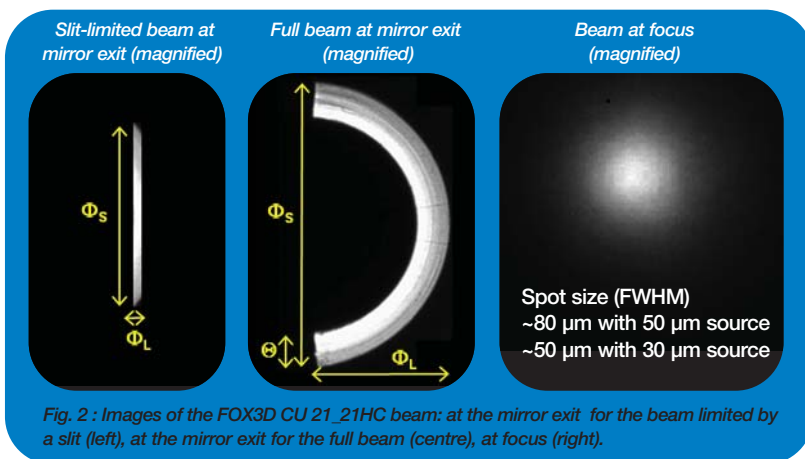


Fig. 2 : Images of the FOX3D CU 21_21HC beam: at the mirror exit for the beam limited by a slit (left), at the mirror exit for the full beam (centre), at focus (right).

Principal Features

- single Bragg reflection optic
- high efficiency multilayer coating
- high angular collection efficiency
- aspheric substrate (ellipsoid)
- high convergence in the sagittal direction

Benefits

- high X-ray beam intensity
- high angular flux density
- customizable asymmetric convergence
- small spot capability
- improved beam focusing
- compact mechanical design

Applications

- Rapid X-ray Reflectometry (full beam)
- Scanning X-ray Reflectometry (with slit)
- Small Spot diffraction for in-line metrology

Optional Accessories

- alignment camera
- collimator
- vacuum pump
- alignment stage

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Preliminary Technical Data

Subject to technical changes without notice

Beam features

• Wavelength 1.54 Å / 8 keV (Cu K α)

• K β contamination < 0.3%

Beam configuration (customizable)	Full beam	Slit-limited Beam
• Typical flux (vacuum, 50W/50µm source)	> 600 x 10 ⁶ photons/s	> 26 x 10 ⁶ photons/s
• Beam Convergence (Φ_L, Φ_S and Θ are defined in Fig.3)	$\Phi_S \geq 4$ degrees $\Phi_L \geq 2$ degrees $\Theta = 0.54$ degrees	$\Phi_S = 2.6$ degrees $\Phi_L = 0.05$ degrees
• Spot size at focus (FWHM, 50µm source)	~80 µm	~80 µm
• Spot size at focus (FWHM, 30µm source)	~50 µm	~50 µm

Optical & Mechanical features

• Nominal Distance from source to optic centre 210 mm

• Nominal Distance from optic centre to focus 210 mm

• Substrate Ellipsoid of revolution

• Mechanical dimensions (LxHxW) 62.8 mm x 17.3 mm x 16 mm

Optional Alignment Box

• Primary vacuum housing Optic protection and reduced absorption

• Kapton® windows Loss per window : 0.75%

• Dry vacuum pump Working pressure : 3 mbar
Pumping speed : 0.6 m³/h
Voltage 220 or 110V AC