

# Beam delivery system GeniX<sup>3D</sup> CU Microspot



Dec. 2010

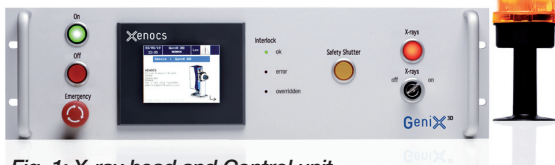


Fig. 1: X-ray head and Control unit

X-ray microdiffraction such as micro-stress analysis requires a small spot with high intensity and moderate divergence. Capillary optics can provide high performance but have the drawback of providing a polychromatic beam and need very short focusing distances to achieve the very small spot.

GeniX 3D Cu Microspot provides a high photon density in a Cu K $\alpha$  monochromatic focussed beam with unmatched spatial resolution (spot size < 30  $\mu$ m). It is a combination of a high brilliance low power microfocus source with most advanced multilayer X-ray optics used in a demagnification configuration in order to achieve a smaller spot size than source focus. The focal distance of few centimeters provides comfortable sample clearance. More over the moderate divergence is adapted for both XRF and XRD analysis.

The GeniX 3D is a low cost of ownership beam delivery system with low facilities requirements (no water consumption, low power) and extreme stability and reliability. Such combination makes it an ideal x-ray source system for both advanced research and industrial applications.

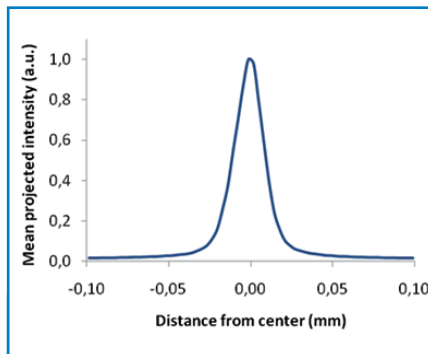


Fig. 2: Sum of linear profiles along one direction for the focal spot

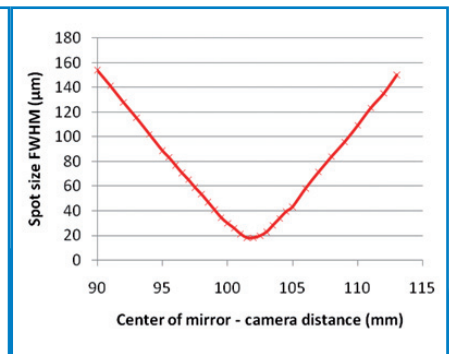


Fig. 3: Focusing curve (FWHM) for the focal spot

## Applications

- microdiffraction
- stress analysis
- micro-XRF

## Benefits

- very high flux density
- excellent beam focusing
- extremely stable beam
- compact system - easy to integrate
- low power & low maintenance source
- smart source power management
- intuitive user interface

## Options

- configurable collimator system
- software utility for remote operation

## Accessories

- alignment camera
- pin diode detector
- dry vacuum pump
- water to air chiller

## Preliminary Technical Data

Subject to technical changes without notice

### Beam features

- Wavelength 1.54 Å / 8 keV (Cu K $\alpha$ )
- Integrated flux in vacuum > 30 x 10<sup>9</sup> phs/s (source run at 30W-50 kV-0.6 mA)
- Divergence 18 mrad FW20%M in both planes
- Spot size at focus < 30  $\mu$ m FWHM
- System output to focus ~ 50 mm (add-on collimator capability)

### Electronic

- Dimensions 3U — 19" - 600 mm in depth
- Total weight 13.6 Kg
- Power 110/220 V (AC) or 24 V (DC)

### Head

- Dimensions (L x W x H) 42 x 12 x 37 cm<sup>3</sup>
- Total weight maximum 14.5 Kg

### Integration

- System power consumption 150 Watts
- Remote control features Ethernet port & software utility
- System shutters Safety shutter
- Cooling flow rate (closed loop) >1.2 l/min (set point 25°C)
- Dry vacuum pump Working pressure : 3 mbar  
Pumping speed : 0.6 m<sup>3</sup>/h

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