

DCC X-Beam for Monochromatic Excitation

DCC X-Beam™ is an X-ray excitation system that generates a focused, monochromatic X-ray beam by integrating a low-powered X-ray tube with an innovative doubly-curved crystal (DCC) X-ray optic. This plug-and-play solution delivers a high-quality excitation X-ray beam and breakthrough performance for the most demanding analytical applications. The compact size and ease of use of the DCC X-Beam enables seamless retrofitting with customer instruments.

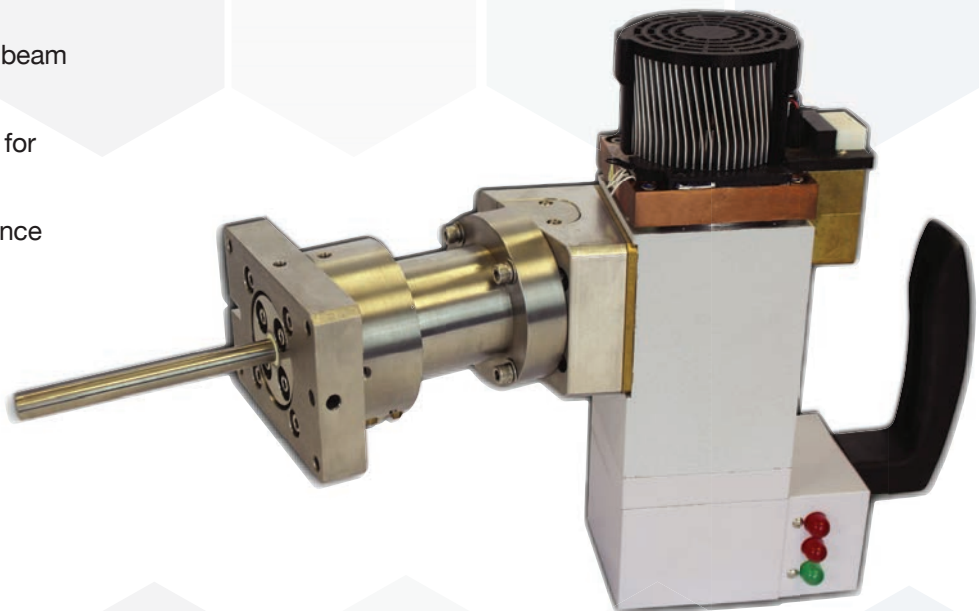
DCC X-Beam

Features and Benefits

- Highly monochromatic X-ray beam with high flux density
- Superior detection sensitivity for XRF analysis
- Focused X-ray beam to enhance spatial resolution
- Integrated shutter module meeting PTB regulations
- Oil-free packaging
- Plug-and-play capability
- PC controlled software interface included

Optional Features

- PCS50 controller available for end-users



Custom Solutions

DCC X-Beam™ can be used in various applications where monochromatic X-ray beam is required. Various optic designs and configurations are available for XRF, XRD, XRR, and medical imaging applications. DCC optics produce highly monochromatic X-rays with the Ka/Kb ratio higher than 1000:1. This results in significantly improved data quality and detection sensitivity. Below are typical examples of DCC X-Beam applications. XOS offers custom solutions based on customer requirements.

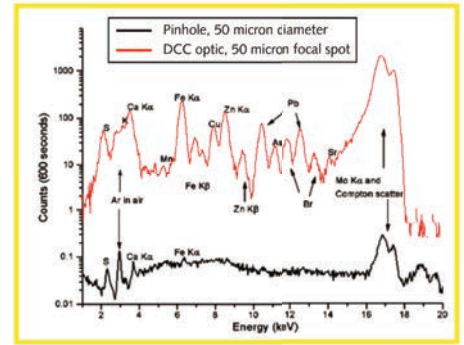


Figure 1

Comparison of a Mo DCC and a pinhole for elemental analysis of concentrated air particulates. Mo excitation (40kV, 20W, 600s).

Highly-Focusing Optics			
E (keV)	Focused Beam Size (μm)	Focal Length (mm)	Flux Density (photons/s/mm ²)
5.4	100	100	6 x 10 ¹⁰
8.05	60	150	7 x 10 ¹⁰
17.5	80	150	2 x 10 ¹⁰
20.2	80	150-200	1 x 10 ¹⁰

XRF Applications:

- Monochromatic Micro XRF Analysis
- In-Situ and In-Line Process Monitoring
- Small Particle Analysis
- Elemental Mapping
- Thin Film Metrology

Slightly-Focusing Optics			
E (keV)	Focused Beam Size (mm)	Divergence (degrees)	Flux Density (photons/s/mm ²)
5.4	200	0.3	2 x 10 ⁹
8.05	200	0.3	6 x 10 ⁸
17.5	200	0.28	3 x 10 ⁷

XRD and SAX Applications:

- Single Crystal XRD
- Powder XRD
- In-Situ and In-Line Process Monitoring
- Texture, Stress, and Strain Measurements

* Note: Flux density measured at 50 kv/50w



PCS50 controller is available for research applications. It offers precise command and custom settings.

Dimensions: 382mm W x 335mm L x 107mm H

Technical Specifications

Available Targets*	Cr, Cu, Mo, Rh
Nominal Output Power	50kV/50W
Ambient Operating Temperature	20°-30° C
Cooling Mode	Integrated forced air

Included: Built-in safety shutter & 8-position filter wheel

*Other target materials may be available upon request.



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