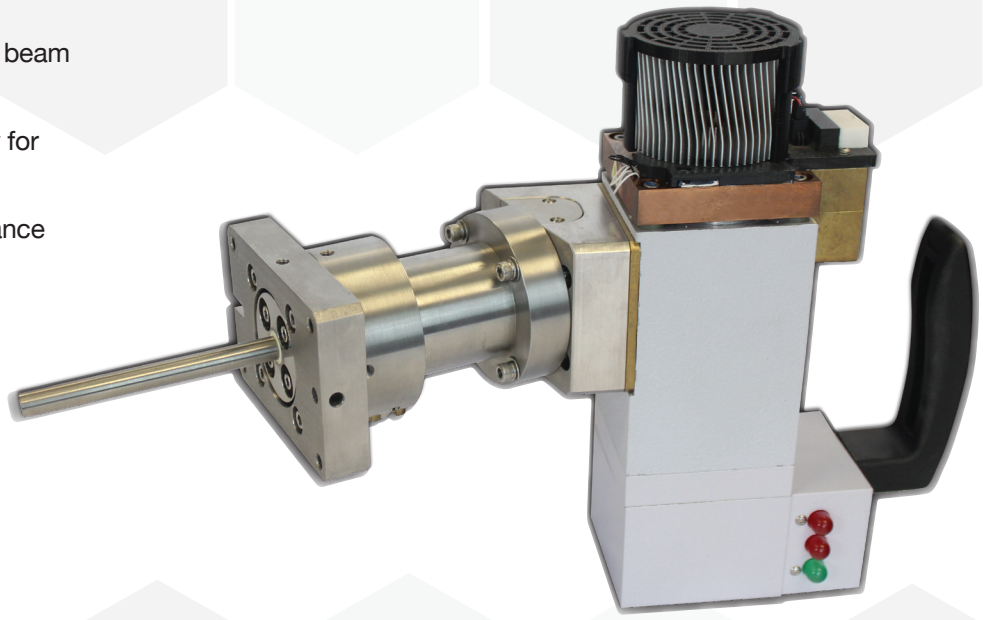
DCC X-Beam for Monochromatic Excitation

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.

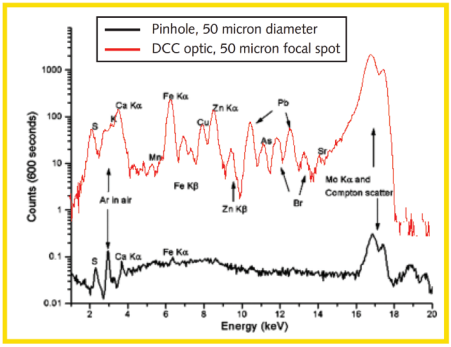


Figure 1

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/mm2)
5.4	100	100	6×10^{10}
8.05	60	150	7×10^{10}
17.5	80	150	2×10^{10}
20.2	80	150-200	1×10^{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** (µm)	**Divergence** (degrees)	**Flux Density** (photons/s/mm2)
5.4	200	0.3	2×10^{9}
8.05	200	0.3	6×10^{8}
17.5	200	0.28	3×10^{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.*

XOS®
better analysis counts

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