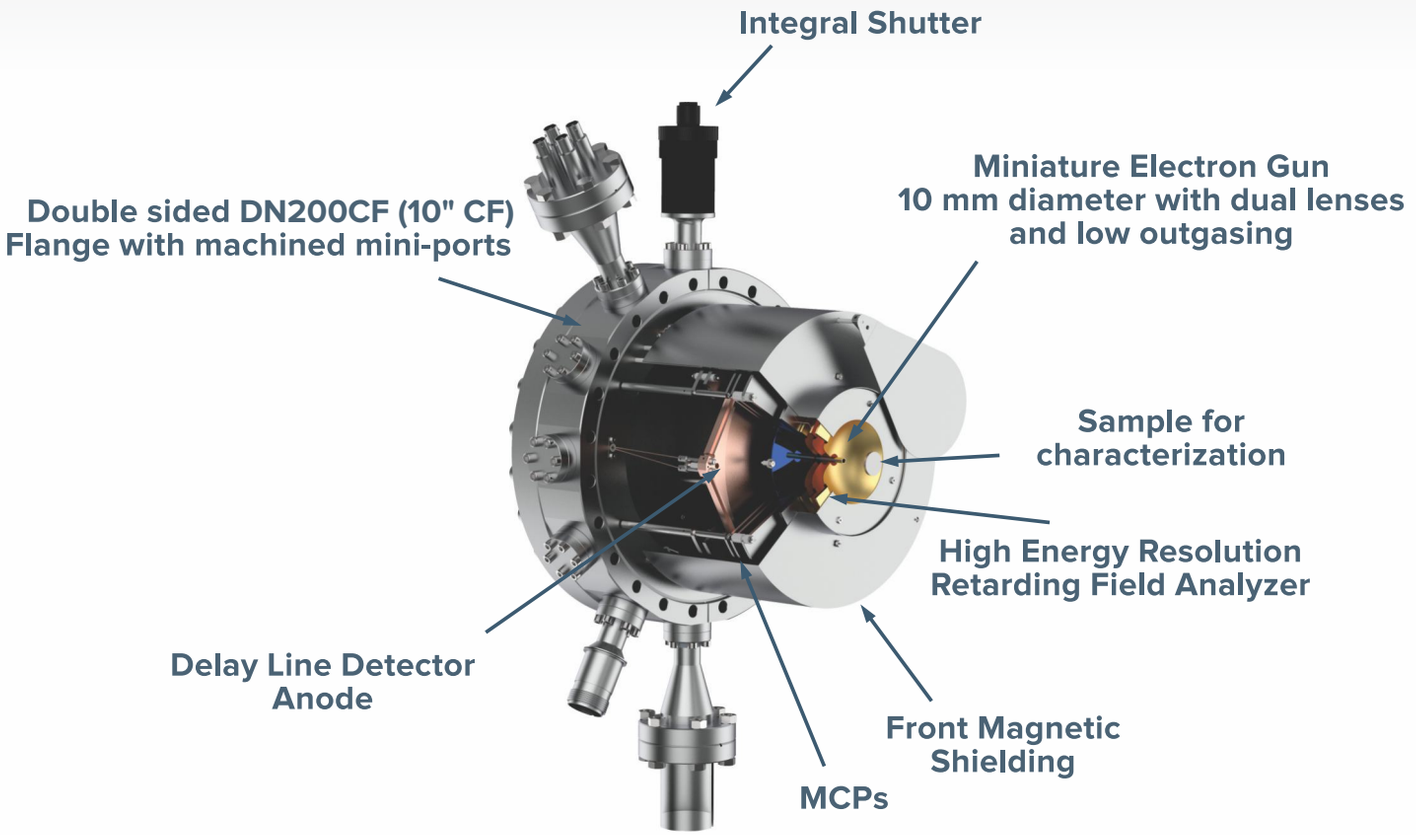
Surface Crystallography Spectrometer

based on Low Energy Electron Diffraction (LEED) with Delay-Line Anode and Microchannel Plates

FemtoLEED, Model DLD-L1000



Features:

- Fully digital image acquisition
- No fluorescent screen
- Minimized blind area
- Dual 80 mm Microchannel Plates (MCP)
- Electron diffraction on insulating single crystal samples
- Miniature Electron Gun with double focusing
- Large coherence width
- Superior magnetic shielding
- Integral Shutter

Applications

The FemtoLEED, Model DLD-L1000 is specifically useful for investigations on ultra-sensitive and insulating single crystals substrates with organic epitaxial films.

The fully digital system negates the need for an external CMOS camera for live image capture.

Materials suitable for characterization should be single crystals and epitaxial films in categories such as: 2D materials, semiconductors, metals, oxides and magnetic films.

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FemtoLEED - Model DLD-L1000

Specifications

FemtoLEED (Model DLD-L1000)

Detector	Delay Line Detector with dynamic range 32 bit per channel, 75 µm spatial resolution, active area diameter 75 mm and mounting diameter 196 mm. The hex-anode provides minimized blind area due to the redundant detection opportunities of the added third delay line layer. 77° angle of acceptance from sample Microchannel Plates Electron gain: 10^7, operating in pulsed mode
Retarding Field Analyzer	Concentric assembly of hemispherical grids Working distance from sample 15 mm
Grid Material	Gold coated St-Steel wire mesh (100 mesh, 81% transparency)
Energy Resoulution	0.2%
Linear Motion	External nipple with bellow up to 150 mm retraction
Integral Shutter	Open and close at any position of the linear motion
Magnetic Shielding	Mu-metal cylinder with front cover for maximum magnetic field attenuation
Assembly	Extreme-high-vacuum compatibility with stainless steel, high alumina and gold-plated copper alloy materials
Mounting	DN200CF(10"CF) double sided conflat flange with port length range 145 mm - 580 mm
Bakeability	Under vacuum, 250°C maximum

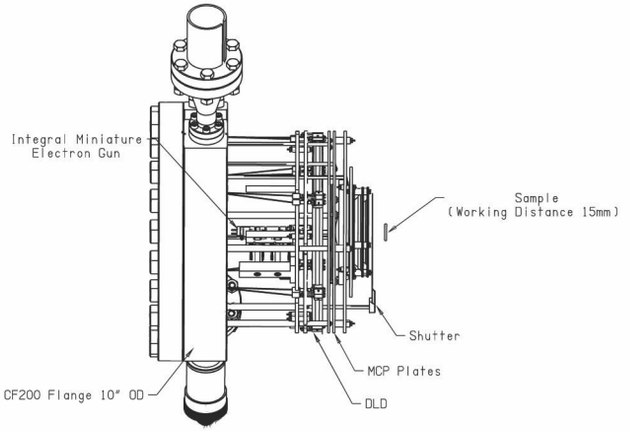
INTEGRAL MINIATURE ELETRON GUN

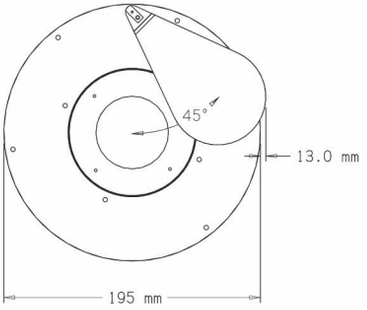
Beam Energy	LEED - 5 eV to 750 eV
Beam Current	Range from nA to fA
Beam Size	From 300 µm to 100 µm
Electron Source	Tungsten-2%Thoriated filament standard, Single crystal LaB6 filament optional
Energy Spread	0.45 eV (thoriated-tungsten filament)
Overall Size	10 mm lens diameter and 80 mm length

Ordering guide

DLD-L1000	LEED optics with 2 microchannel plates, delay line detector and an axial electron gun on 10" CF (CF200) flange
LMX-EXT	External linear motion (nipple-bellow) (X=retraction distance)
ISH	Integral shutter
LPS075-D	Digital power supply with voltage range 0 - 750 V
MCPS2	Controller for microchannel plates with overvoltage and overcurrent protection
DLA-TR8	Controller for delay line detector and computer interface PCI card
DLD-LIM32	Delay line detector acquisition software and LEED analysis software for Windows 10/11

Schematic Drawings





Control Electronics

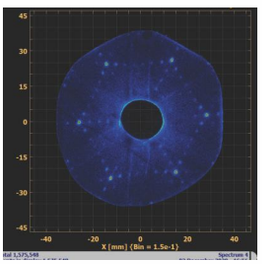
LPS075-D	Digital LEED power supply (0-750 V) with USB interface and PC control software for Windows 10/11. True primay beam current and total emission measurements. Automatic start-up and shut down, 10 memory settings including standby and outgassing mode with timer, constant beam current mode.
MCPS2	Electronics for two microchannel plates with digital displays of voltages and MCP load current measurements and protection.

LEED Software

DLD-LIM32	LEED pattern measurements and analysis software and hardware for Windows 10/11 including: ·Automatic LEED pattern acquisition ·Automatic I-V analysis with spot tracking ·Automatic I-T analysis ·Automatic spot profile analysis

Data

Si (111) - at 52 eV Beam Energy



Ge (001) - at 200 eV Beam Energy