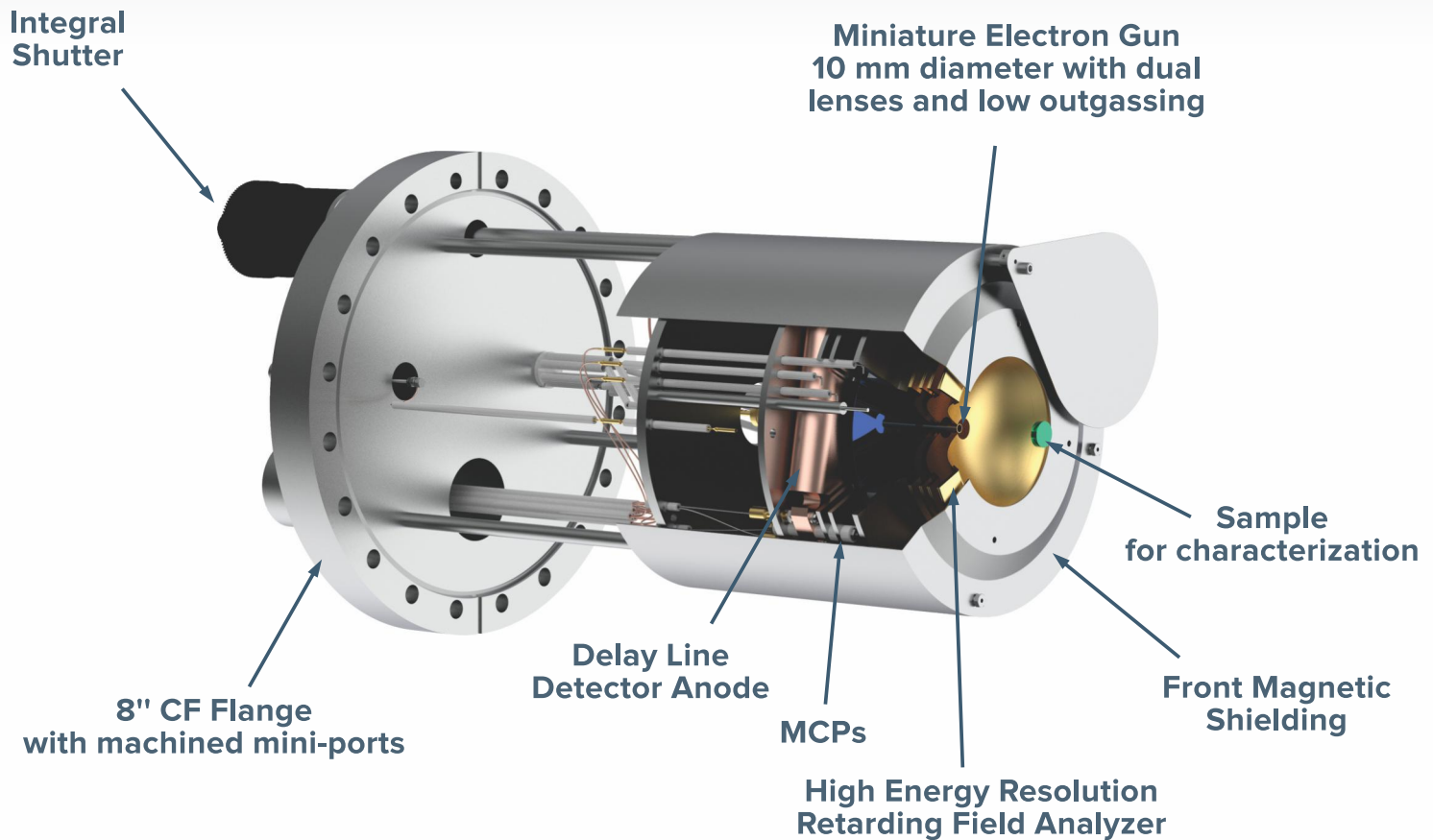


# Surface Crystallography Spectrometer

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

FemtoLEED, Model DLD-L800



## Features:

- Fully digital image acquisition
- No fluorescent screen
- Dual 80 mm Microchannel Plates (MCP)
- Primary electron beam in the range of femto ampere
- Electron diffraction on insulating single crystal samples
- Large coherence width
- Superior magnetic shielding
- Integral Shutter

## Applications

The FemtoLEED, Model DLD-L800 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.

# FemtoLEED - Model DLD-L800

## Specifications

### FemtoLEED (Model DLD-L800)

<b>Detector</b>	Delay Line Detector with dynamic range 32 bit per channel, 75 $\mu\text{m}$ spatial resolution and active area diameter 145x145 mm 77° angle of acceptance from sample Microchannel Plates Electron gain: $10^7$ , operating in pulsed mode
<b>Retarding Field Analyzer</b>	Concentric assembly of hemispherical grids Working distance from sample 15 mm
<b>Grid Material</b>	Gold coated St-Steel wire mesh (100 mesh, 81% transparency)
<b>Energy Resolution</b>	0.2%
<b>Linear Motion</b>	External nipple with bellow up to 150 mm retraction
<b>Integral Shutter</b>	Open and close at any position of the linear motion
<b>Magnetic Shielding</b>	Mu-metal cylinder with front cover for maximum magnetic field attenuation
<b>Assembly</b>	Extreme-high-vacuum compatibility with stainless steel, high alumina and gold-plated copper alloy materials
<b>Mounting</b>	DN150CF(8"CF) conflat flange with port length range 145 mm - 580 mm
<b>Bakeability</b>	Under vacuum, 250°C maximum

### INTEGRAL MINIATURE ELECTRON GUN

<b>Beam Energy</b>	LEED - 5 eV to 750 eV
<b>Beam Current</b>	Range from nA to fA
<b>Beam Size</b>	From 300 $\mu\text{m}$ to 100 $\mu\text{m}$
<b>Electron Source</b>	Tungsten-2%Thoriated filament standard, Single crystal LaB6 filament optional
<b>Energy Spread</b>	0.45 eV (thoriated-tungsten filament)
<b>Overall Size</b>	10 mm lens diameter and 80 mm length

## Ordering Guide

<b>DLD-L800</b>	LEED optics with 2 microchannel plates, delay line detector and axial electron gun on 8" CF (CF150) flange
<b>LMX-EXT</b>	External linear motion (nipple-bellow) (X=retraction distance)
<b>ISH</b>	Integral shutter
<b>LPS075-D</b>	Digital power supply with voltage range 0 - 750 V
<b>MCPS2</b>	Controller for microchannel plates with overvoltage and overcurrent protection
<b>DLA-TR8</b>	Controller for delay line detector and computer interface PCI card
<b>DLD-LIM32</b>	Delay line detector acquisition software and LEED analysis software for Windows 10/11

## Control Electronics

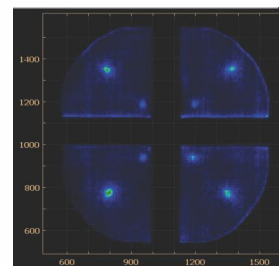
<b>LPS075-D</b>	Digital LEED power supply (0-750 V) with USB interface and PC control software for Windows 10/11. True primary beam current and total emission measurements. Automatic start-up and shut down, 10 memory settings including standby and outgassing mode with a timer, constant beam current mode.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

## LEED Software

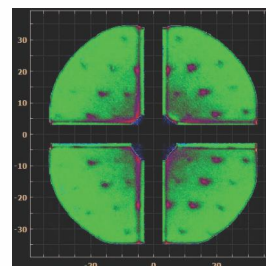
<b>DLD-LIM32</b>	LIM-DLD LEED pattern measurements and analysis software and hardware for Windows 10/11 including: <ul style="list-style-type: none"> <li>-Automatic LEED pattern acquisition</li> <li>-Automatic I-V analysis with spot tracking</li> <li>-Automatic I-T analysis</li> <li>-Automatic spot profile analysis</li> </ul>
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## Data

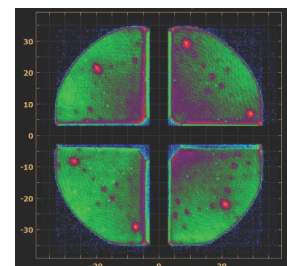
MgO(100) - Beam Energy 10 eV and 100 eV



Si (111) - Beam Energy: 10 eV



Si (111) - Beam Energy: 50 eV



## Schematic Drawings

