

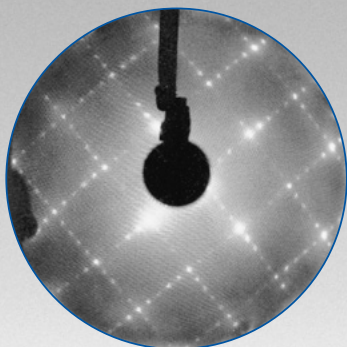
COMPONENTS FOR SURFACE ANALYSIS

Reverse View LEED Optics ErLEED 100/150

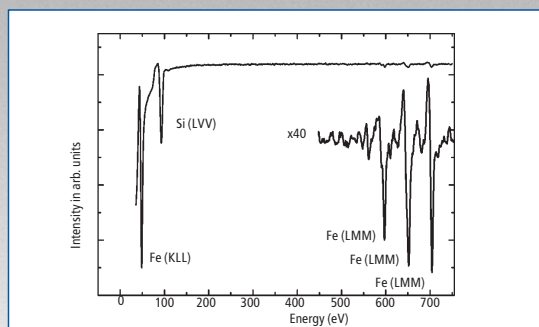


- High performance optics for LEED and AES
- Mounted on DN100CF (6" OD) or DN150CF (8" OD) flange
- Light shielded miniature electron gun
- 50 or 100 mm z-retraction (optional)
- Integral multi-segment shutter (optional)
- Digitally or analog controlled power supplies with independent HV modules
- Software for Auger spectroscopy and quantitative LEED studies (optional)

ErLEED 100/150



High brightness daylight display



AES spectrum of Fe_3Si (100)

OPTICS

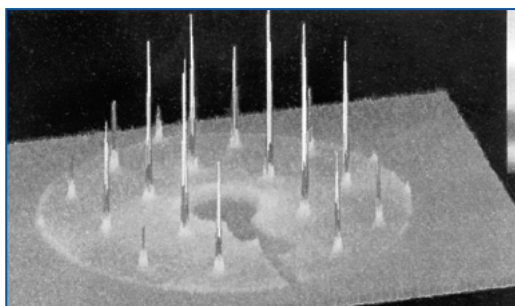
The SPECS reverse view ErLEED optics was designed at the University of Erlangen-Nürnberg (Lehrstuhl für Festkörperphysik) and has been developed over a period of some 20 years to its current high performance specifications. It is manufactured exclusively by SPECS.

In order to guarantee the highest possible quality and performance of each optics great importance is attached to the selection of the materials and components as well as to the quality of the mechanical and electrical manufacturing.

The miniature electron gun allows a full view of the diffraction pattern. It is completely light shielded in order to avoid stray light and thus to be able to measure quantitative LEED I(E) curves or spot profiles.

Two types of filaments are available: Thorium coated Iridium hairpin and LaB_6 single crystal.

The Thorium coated Iridium filaments allow the operation of the gun at pressures of up to 10^{-4} mbar Oxygen. All filaments are easily replaceable in the users laboratory.



3D graphics of LEED intensities recorded with AIDA-PC

The high transmission grid assemblies are made of Gold coated Molybdenum ensuring long term rigidity of the hemispheres as well as an uniform work function and non-magnetic characteristics. The optics is available in a 2, 3 and 4 grid version.

Two different sizes are offered. The ErLEED 100 mounted on a DN100CF flange (6" CF, 152 mm OD), while the ErLEED 150 is mounted on a DN150CF flange (8" CF, 203 mm OD).

A z-retraction mechanism allows the optics to be extended or withdrawn from a restricted working area. Z-travel of 50mm or 100mm is available.

The optics can be protected by an integral multi-segment shutter mounted in front of all grids.

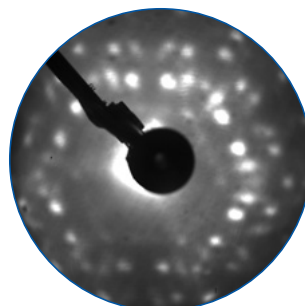
All ErLEED optics are fully tested under UHV conditions before delivery. A detailed test certificate is supplied with each optics.

Several layers of organic 4T = Quaterthiophen molecules on Ag(111) surface

COURTESY OF

A. Langner,
M. Schneider,
M. Sokolowski and
E. Umbach,

Experimentelle
Physik II,
Universität Würzburg,
Germany



LEED pattern at 9 eV electron energy

Controls



ErLEED 3000 D

- Fully floating unit measures true beam current
- Up to 9 independent high precision HV-modules (primary energy, Wehnelt, anode, Einzel lens, suppressor, screen, collector, detection energy)
- Primary energy 0-1000 eV (LEED), 0-3000 eV (AES)
- Screen voltage 0-10 kV
- All voltages adjustable with offset and gain
- Internal and external measurement of the beam current
- Internal ramp generator with 0-2000 eV detection energy (AES)
- Variable energy sweep and scan time
- Collector voltage 0-500 V
- Internal sine generator with 750 Hz - 1.25 kHz oscillator frequency, 0-12 V ptp amplitude, 1f, 2f and reference output
- External monitoring of the primary energy

ErLEED 3000 D power supply for LEED / AES

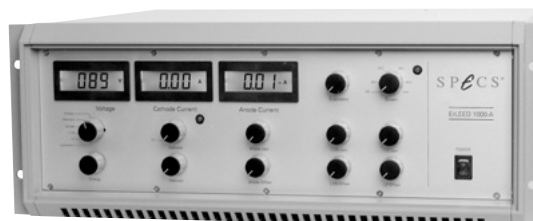
- External 0-10 V control of primary and detection energy
- Preamplifier, filter and matching unit
- Integrated Lock-In amplifier (optional)
- 68332 micro controller
- 18 bit D/A A/D converters for control and read-out of voltages
- Large screen dot-matrix LC display with back-light
- Manual operation by numeric keypad, Up-Down buttons, and rotary control knob
- Operation by PC via RS232 interface
- Non-volatile memory for store and recall of complete parameter settings
- 19" rack, height 182 mm, weight 11.5 kg
- Wide range mains input: 85-264 V, 47-440 Hz

ErLEED 1000A

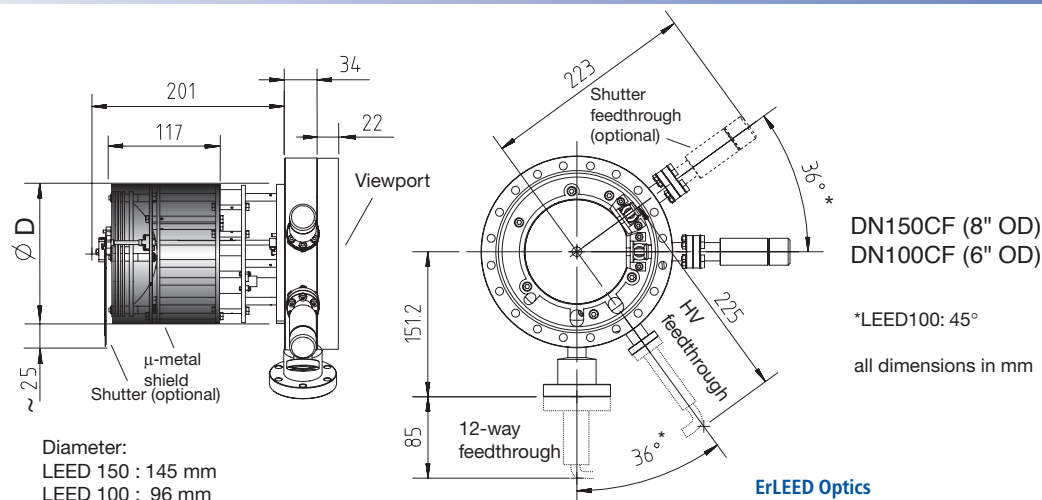
- Fully floating unit measures true beam current
- Lens voltages run as function of beam energy
- 5 independent high-precision HV-modules (primary energy, extractor, Einzel lens, suppressor, screen, detection energy)
- 3 digital meters for current and voltage display
- Primary energy (LEED) 0-1000 eV
- Screen voltage 0-7.5 kV
- Gun voltages (lens 1/3, lens 2 and anode) adjustable with offset and gain
- Input for external control

- of primary energy 0-10 V
- External measurement of beam current
- External monitoring of primary energy
- 19" rack, height 182 mm, weight 10 kg
- 220-240 V, 50 Hz or 100-120 V, 50-60 Hz

ErLEED 1000 A analog power supply



Technical Data



ErLEED 150 / ErLEED 100

| | | |
|---------------------|---|---|
| Magnetic shielding: | Mu-metal | Working distance (Δ): |
| Bakeout temp.: | 250°C | (for 150 mm / 100 mm optics) |
| Type of optics: | ErLEED 150/100 | 2 grids 30 mm / 23 mm |
| Grids: | Gold coated Molybdenum | 3 grids 25 mm / 19 mm |
| Grid transmission: | 81% | 4 grids 24 mm / 15 mm |
| Number of grids: | 2, 3 or 4 grids | Sample to flange distance |
| Screen: | Hemispherical rear view glass screen coated with ITO conducting layer and P43 Cadmium free Phosphorus | (for fixed length optics): |
| Viewing angle: | 100° / 84° | 165 mm (6.5") |
| Gun diameter: | 15 mm (0.6") | 203 mm (8") |
| Gun energy range: | 0-3000 eV | 254 mm (10") |
| Spot size: | < 1 mm @ 1 μ A & 100 eV | (other lengths available on request) |
| Beam current: | >15 μ A @ 1 keV | Sample to flange distance |
| | >45 μ A @ 3 keV (AES) | (for retractable optics, fully extended): |
| Filaments: | Thoria coated Iridium hairpin for operation at pressures up to 10 ⁻⁴ mbar or LaB ₆ single crystal. | 254 mm (10"), 50 mm z-retraction |
| Mounting flange: | DN150/100 CF (8" / 6" OD) | 350 mm (13.8"), 100 mm z-retraction |
| Diameter D: | 145 mm / 96 mm | Power supplies: |
| | | ErLEED 1000A analog for LEED |
| | | ErLEED 3000D digital for LEED/AES |
| | | Software: |
| | | AIDA-PC/ RFA-PC |
| | | Weight: |
| | | 15 kg / 8.2 kg |

SPECS GmbH – Surface Analysis
and Computer Technology
Voltastrasse 5
13355 Berlin
GERMANY

Tel: +49 (0)30 46 78 24-0
Fax: +49 (0)30 4 64 20 83
e-mail: support@specs.de
http://www.specs.de

Your Representative:

SPECS reserves the right to alter technical specification without further notice.