



ELECTRON MONOCHROMATORS

Electron monochromators are employed in a variety of applications such as Inverse Photoemission Spectroscopy (IPES) where a narrow energy distribution is required. These sources provide energy widths in the millivolt regime, far narrower than possible with a conventional electron gun. The standard primary energy range is 0-250 eV but higher energy can be supplied on custom units.

LK Technologies offers two basic units which can each be mounted in a variety of ways. The **LK5000M** offers state of the art resolution adjustable to below 1 meV at the highest achievable beam current as a function of resolution. This performance is achieved by means of a dual pass monochromator with double-focusing sectors. The **LK2000M** employs a single pass monochromator and provides resolution as low as 5 meV. Each unit employs full digital control electronics with Windows based software.

The LK2000M can be supplied mounted on an DN150CF (8 inch OD) flange or larger with all necessary wiring and electrical feedthroughs. It can also be supplied custom mounted such as on a baseplate for wiring by the customer. The LK5000M can be supplied mounted on a DN200CF (10 inch OD) flange or mounted in its own subchamber for attachment to the customer chamber. In this latter geometry a special transfer lens is employed to transport the beam from the subchamber to the sample.

Please contact the company for additional specifications and your requirements for an electron monochromator system. Below are basic specifications on the LK5000M.

Model LK5000M DOUBLE PASS ELECTRON MONOCHROMATOR

1. Two stage cylindrical deflection electron monochromator with dual focusing sectors
2. Retarding first stage monochromator optimized for space charge
3. Lanthanum hexaboride cathode with special magnetic shield of cathode
4. Dual focusing zoom lens system with 5 element lens for long working distance
5. Operation designed for grounded target (sample) condition or adjustable to +/- 15 V sample bias
6. Monochromator can be housed in cylindrical chamber with DN200CF (10 inch OD) main flange
7. Chamber can attach to customer chamber on DN100CF (6 inch OD) side flange
8. Construction by all UHV non-magnetic materials
9. Dual magnetic shield in monochromator chamber for residual field nominally 2 mG or lower
10. Optics bakeable to 250C
11. Spot size at target approximately 0.5 x 0.5 mm, variable with beam energy
12. Angular spread at target approx. +/- 1.5 degrees, variable with beam energy

Model LK5000M-DAC CONTROL ELECTRONICS AND SOFTWARE

1. Operation for primary beam energy 0-250 eV
2. Control of all voltages by low-noise digital electronics
3. Ripple on voltages less than 250 microvolt p-p
4. Fast picometer for on-screen control and readout of currents at 6 points in monochromator
5. Noise reduction filter mounted on main flange
6. WindowsTM based software and interface equipment for PC compatible computer
7. On screen readout with ability to store and recall all voltages
8. Ability to change voltages on any element by mouse click and movement/slow or fast adjust control
9. Software includes push-button autotuning on single lens or general autotuning for all relevant voltages with user-modifiable library of autotuning files. Autotuning can be applied to currents at sample or key elements of monochromator

GENERAL PERFORMANCE SPECIFICATION OF CURRENT AND RESOLUTION

Achieved resolution FWHM 0.4 meV at target current of greater than 15 pA

Achieved resolution FWHM 0.7 meV at target current of greater than 37 pA

Typical performance specification

Monochromatic resolution 1.5 meV FWHM at target current of 120 pA

Monochromatic resolution 2.5 meV FWHM at target current of 250 pA

Details and specifications subject to change without notice.