

K975X

Turbo-Pumped Thermal Evaporator

A high vacuum evaporator for TEM, SEM and thin film applications



The K975X features:

- Menu-driven automatic operation
- Unique 'anti-stick' carbon rod evaporation gun
- Metal evaporation source
- Specimens up to 140mm² or 200mm diameter
- Wide selection of 'add-on' options
- Rack-out drawer specimen loading
- Restricted or full vent control

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Carbon rod evaporation source. The height of evaporation sources can be adjusted using threaded terminal pillars



"Anti-stick" carbon evaporator source, designed to accept 6.15mm diameter carbon rods. Four springs maintain an even pressure during the evaporation process and ensure even, reproducible deposition



The standard metal source can be used to evaporate a range of metals from a suitable tungsten filament or boat. The terminals can also be used to evaporate carbon fibre. An adjustable source shield is fitted to help maintain the cleanliness of the system



Rotary planetary specimen stage mounted on the sliding access drawer



Specimen stage in position. The quartz crystal and holder of the optional film thickness monitor (FTM) locate into a recess in the stage and can be angled towards the evaporation source

K975X Turbo-Pumped Thermal Evaporator

The K975X is a compact, bench-mounted, multiple application thermal evaporator for vacuum deposition of thin layers of carbon and metals. It is ideal for a wide range of techniques, including the manufacture of carbon support films and replicas for TEM, plus metal and carbon thin film applications.

The K975X is available with a wide range of optional add-ons, including low-angle shadowing and sequential layer coating using dual-source evaporation (an additional metal evaporation source is needed). A sputtering attachment and film thickness monitor are also available.

The system is fitted with an 80mm diameter flat rotation specimen stage, but this can be exchanged for optional stages and holders to meet differing user requirements.

The K975X vacuum system is under fully automatic or manual control and uses a 100L/s turbomolecular pump to ensure rapid pump down and clean vacuum conditions.

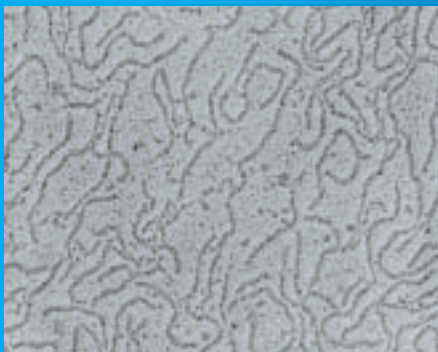
K975S Carbon Evaporator for 8" wafers

The K975S is similar to the K975X but designed to coat an 8" wafer or similarly large specimen with carbon. The carbon rod evaporation source is directly mounted to the vacuum chamber top plate, allowing easy access to the carbon gun and giving the optimal source to specimen distance required for large diameter specimens. Unlike the K975X, the K975S is not fitted with a metal evaporation source and associated base plate mounting pillars and also has a larger specimen access door.

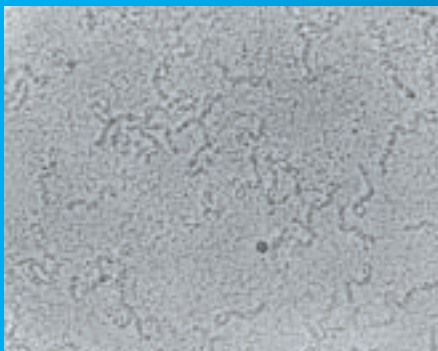
Examples of low angle shadowing using carbon and platinum evaporation:



Pseudomonas fluorescens



DNA strands



Spectrin molecules

Main features

Metal and carbon coating sources

The K975X is fitted with a resistive carbon rod gun and a metal filament/boat source which can also be used for cleaning TEM and SEM apertures. An optional sputtering source is available.

Work chamber and specimen stage

The borosilicate glass work chamber is 250mm diameter x 300mm high and mounted on an aluminium support collar. A tough chamber implosion guard is included as standard. The chamber can accommodate specimens up to 200mm/8" in diameter. A unique rack-out specimen loading system gives the user easy access and the hinged lid assembly makes other areas of the vacuum chamber readily accessible.

Intuitive menu-driven control

The menu-driven microcontroller allows the user access to a range of options but readily 'defaults' to optimum operating conditions, allowing both fully-automatic and manual override as required.

Turbomolecular pumping and venting

The K975X uses a modern 100L/s turbomolecular pump backed by an external rotary vacuum pump (not included, see optional EK3175) with the vacuum pump down sequence being automatically controlled by the system microprocessor. Vacuum measurement is by a combined pirani/penning gauge and is displayed digitally.

Process gases (nitrogen for venting – if fitted – and argon for the optional EK4175 sputtering attachment) are automatically controlled and can be programmed for use during coating sequences. The vent valve has an adjustable restrictor and programmable vent time to prevent disturbing specimens due to the inrush of gas at the end of the process cycle.

A very useful feature of the K975X is "vacuum shut-down", which allows the process chamber to remain under vacuum when not in use. This helps to maintain a high level of system cleanliness and vacuum performance.

Specimen stages

The K975X is fitted with an 80mm flat stage as standard, but this may be exchanged for optional stages, such as a holder for 3mm TEM grids, a low-angle shadowing attachment and a rotary planetary stage (see *Options and Accessories*). Specimen stages are supplied with bayonet fixings for quick exchange.

The rotary stage is mounted on a sliding access port on the side of the chamber. This allows the user to exchange specimens quickly without having to remove the glass chamber and disturb the pre-set coating set-up.

For rotary shadowing techniques the standard stage can be tilted from 0° to +/-180°.

Chamber base plate and evaporation power supplies

The K975X is fitted with a 0-100A evaporation power supply with base plate terminals for carbon rod evaporation (14V/100mA), evaporation from a metal filament (15V/35mA), carbon fibre evaporation (25V/35mA) and a terminal rated at 5V/35mA for TEM and SEM aperture cleaning using an optional molybdenum boat.

For more details see *Options and Accessories*.

Ordering Information

NB: For a full quotation, including on-site installation and customer training, please contact us or our local distributor

EK3154	K975X Turbo-pumped thermal evaporator
EK3153	K975S Turbo-pumped thermal evaporator with loading stage to accept an 8"/200mm wafer
EK3175	Edwards RV3 50L/m two-stage rotary pump with vacuum hose, coupling kit and oil mist filter

Stages and other options

AL410414	Holder for TEM grids
T0983	Film thickness monitor attachment with controller mounted in the K975X consol. Includes monitor and stage complete with quartz crystal holder and quartz crystal
EK4117	Additional metal evaporation source for filament/boat evaporation and aperture cleaning
EK4160	Low-angle shadowing. Ideal for flat TEM specimens, such as DNA proteins and virus particles
EK4205	Rotary planetary specimen stage (with externally adjustable tilt)
EK4175	Sputtering module, including chromium target (other targets available as options, see Q150T sputter coater for full list)
AL410123	Manually operated source shutter

Accessories and consumables

A0754	Specimen baskets — tungsten, pack of 10
B5230	Specimen baskets — tungsten, pack of 10
B5236	Basket heater (for use with EK4117)
B5240	Tungsten evaporation source (BN crucible for use with B5236 basket heater)
B5246	Tungsten boat (for use with EK4117)
B5228	Molybdenum boat (for use with EK4117)

Carbon accessories

S8651	Manual shaper for 6.15mm Ø carbon rods (supplied as standard)
A0830A	Carbon rods — unshaped — 6.15mm Ø x 100mm
A0819	Carbon fibre cord — high purity
A0819-5	Carbon fibre cord — high purity (5m)
C5421	Carbon fibre cord — standard grade (1m)



6.15mm carbon rods



S8651 carbon rod shaper used (supplied with the K975X/K975S)

K975X Specification

Instrument case:	450mm W x 500mm D x 300mm H
Instrument weight:	65Kg
Work chamber:	Borosilicate glass with hinged top plate, 250mm Ø x 300mm H (can accommodate wafers to 8"/200mm if K975S is specified)
Safety shield:	Polycarbonate cylinder — removable for chamber maintenance
Carbon source:	Adjustable height with tilt control of 0-200°. Uses 6.15mm Ø carbon rods
Metal source:	Adjustable height with tilt control of 0-200°. Supplied with pack of ten B5230 tungsten specimen baskets
Specimen stage:	Includes 0-45° tilt facility
Vacuum gauge range:	Atmosphere to 1x10 ⁻⁷ mbar
Operating vacuum:	1x10 ⁻⁵ mbar, typically achieved within 15 minutes
Low voltage	Pulsed or variable control
Evaporation supply:	Selectable: 0-5V-15V-25V, out-gas current: 0-25A
Services:	Nitrogen gas (if used for venting) Argon gas (if the optional sputtering attachment is fitted)
Vacuum pumping:	100L/s turbomolecular pump. Requires a 50L/m 'backing' rotary pump with oil mist filter (EK3175)
Electrical supply:	230V/50Hz (8A maximum including pump), 115V/60Hz (16A maximum including pump)
Supplied with:	Accessory kit including: carbon rod (6.15mm Ø x 100mm), evaporation filaments, S8651 manual rod shaper and operating manual

For full specifications, please see our website

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