

Mini E-Beam Evaporators

M-EV

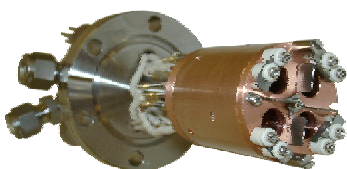
QUAD-EV-S

QUAD-EV-C

Single-pocket Evaporation

Four-pocket Sequential Evaporation

Four-pocket Co-evaporation



Electron-Beam Evaporation

Electron beam evaporation is employed to provide a vapor stream from materials commonly difficult to evaporate with standard thermal techniques. An energetic electron beam is targeted onto the source material which allows an evaporation temperature in excess of 3000 °C to be achieved. *Mini* electron beam evaporators are employed to give maximum control of the evaporation rate at low fluxes and, importantly, to minimise contamination of the vapor stream for sensitive application areas such as surface science or thin-film doping. The construction of mini e-beam evaporators should therefore be aimed at maximising the evaporation control and minimising contamination.

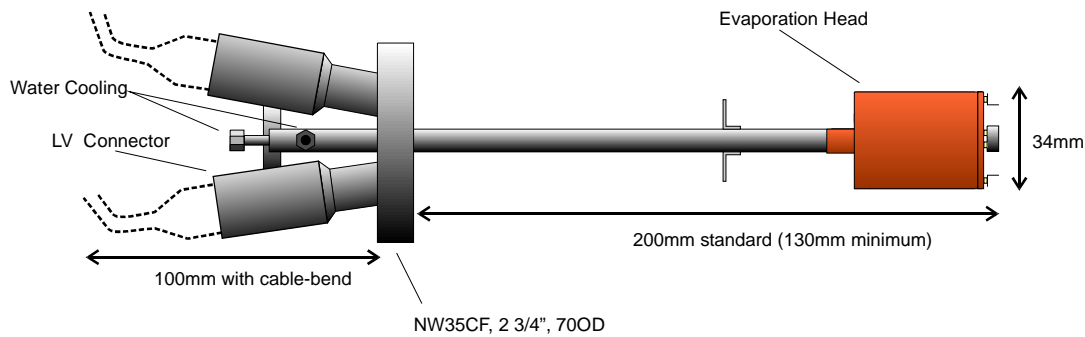
EV-Series Construction

The MANTIS EV-Series mini e-beam evaporators are constructed from high-quality, strictly UHV-compatible materials. The mounting hearth for the source material(s) and the surrounding evaporation head are highly-efficiently cooled, ensuring a rapid heat transfer to the cooling water. This allows all but the emission filament and the source material to remain at near ambient temperature, ensuring negligible outgassing during operation. The sources are all equipped as standard with flux monitoring plates. These allow precise determination of the flux emerging from the source, and hence give the user excellent control of the deposition rate.

MANTIS QUAD-EV evaporators use four material pockets with independent filaments, flux-monitoring plates and high-voltage connections to allow each material to be evaporated independently of the other three. In the QUAD-EV-C source, this is employed to allow independent co-evaporation of up to four materials. Since each material uses an independent high-voltage connection, the evaporator will still function if there is a short-circuit due to accidental overheating of material in one of the pockets.

The power supplies are of a rugged construction, enabling seamless operation without shut-down or malfunction during discharges between the filament and source material (as can happen during initial operation after pump-down). All evaporators can be equipped with either rods or crucibles interchangeably. The choice of which of the two is used depends on the rate required, the material capacity required and the properties of the source material.

QUAD-EV-S/C



M-EV

QUAD-EV-S

QUAD-EV-C

Mounting flange	NW35CF	NW35CF	NW35CF
In-vacuum length	200mm (standard)	200mm (standard)	200mm (standard)
In-vacuum diameter	34mm	34mm	34mm
Pockets	1	4	4
Co-evaporation	No	No	Yes
Power	0-200W	0-200W	0-200/400W
Cooling	Water (0.5 l/min required)	Water (0.5 l/min required)	Water (0.5 l/min required)

Accessories

Crucibles and liners -

For materials with a low vapour-pressure to melting point ratio, it is often necessary to evaporate the material from within a heated crucible. W, Mo, Ta and Vitreous Carbon crucibles are offered as well as ceramic liners to prevent alloying.

Flux Controller -

QUAD-EV-S and M-EV power supplies can be fitted with control electronics to hold the deposition rate constant to within 1%.

Control Software -

The QUAD-EV-C can be supplied with PC interface hardware and accompanying software to allow remote control of all parameters, real-time flux adjustment and pre-programmed flux profiles for all four pockets.

Manual Teardrop Shutter, Automated TeardropShutter.

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