

## K-Cell Miniature Knudsen Evaporation Cell



- Compact, self-contained evaporation cell.
- Unique cartridge design to facilitate quick material change.
- Available in four aperture sizes.
- Available with power supply and temperature controller.
- Complete assembly contained on a 35CF, 2.75" OD flange.

The Chell K-Cell utilises the principle of molecular effusion (demonstrated by Knudsen in 1909). Material to be deposited is heated to a suitable vapour pressure in a isothermal enclosure with an aperture in its wall. Molecular effusion occurs when the mean free path is large compared to the dimensions of the aperture. This gives rise to a cosine intensity distribution which can be collimated to form a beam of electrically neutral material. The advantage of this type of source is its ability to reproducibly deposit material with coverages ranging from sub-monolayer to continuous films. Chell has engineered these principles into a compact, self-contained cell, enabling the researcher to have a convenient, controllable deposition source. The furnace housing, which may be cooled by water or liquid nitrogen, is mounted together with the electrical feed through and the bellows-sealed shutter assembly on a 35CF (2.75"OD) flange. This arrangement allows the cell to pass down a 35mm bore tubulation.

The furnace of the K-Cell is designed as a removable cartridge which contains the crucible, heater element and heat shields. The crucible is heated by a Tantalum foil element which is isolated with Pyrolytic Boron Nitride (PBN) shields.

The central crucible is Graphite with an embedded thermocouple for accurate temperature measurement. The position of this thermocouple has been selected to follow the internal furnace temperature as accurately as possible. The design, developed by Chell's engineers, gives a stable high temperature furnace for controlled deposition of a wide range of materials. For maximum versatility a PBN liner may be fitted into the main furnace. Both the graphite and PBN crucibles are supplied with removable apertures to define and limit the output beam. Chell's unique cartridge design gives maximum flexibility to the user since complete cells of just the PBN liner can easily be replaced when the deposition of a different material is required.