

Vacuum evaporation of organics for SMOLEDs

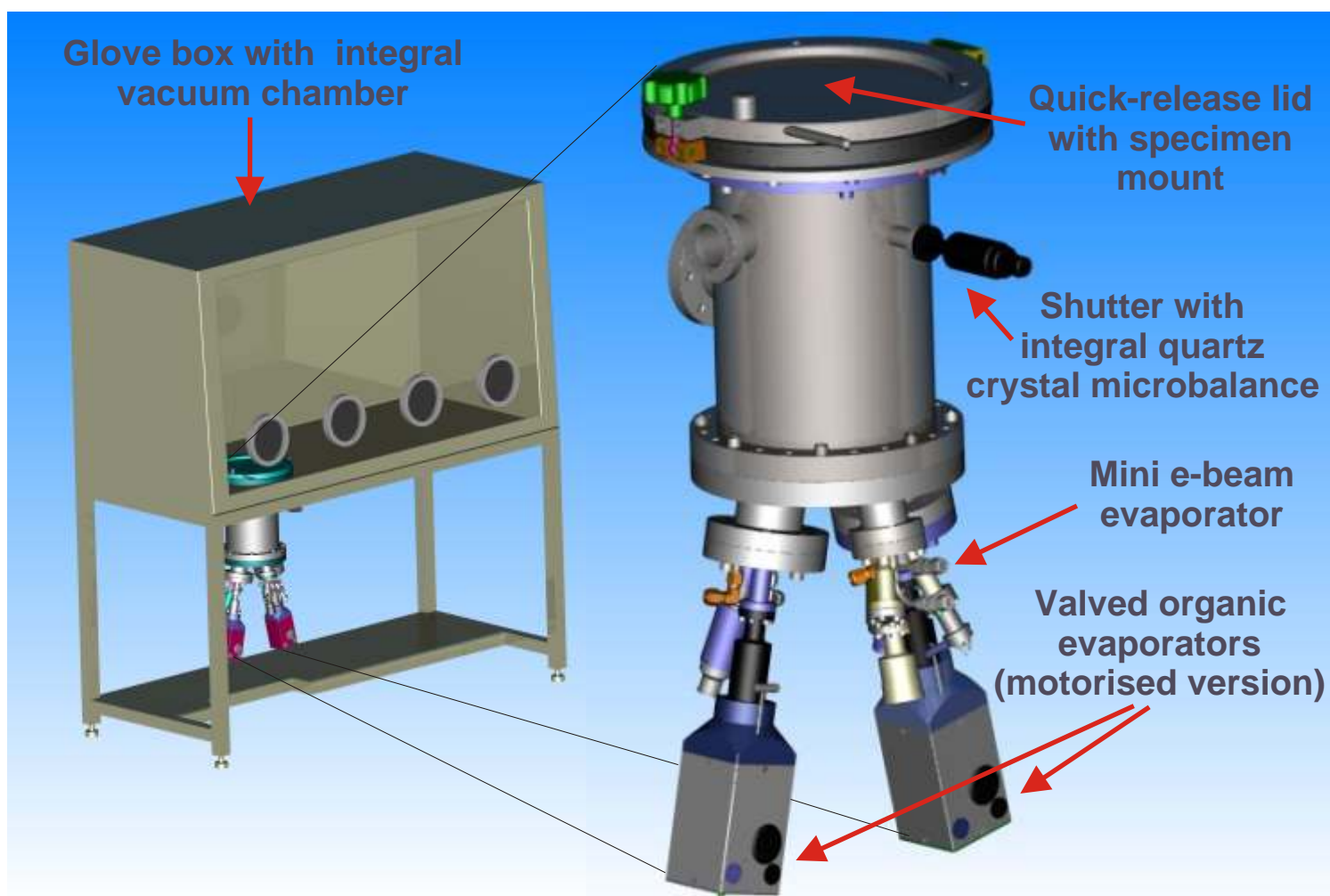
Integrated glove-box/vacuum evaporation unit OLSYS100

Some organic electronic devices incorporate air-sensitive materials which must be processed in a pressurised glove-box. For small-molecule OLEDs (SMOLEDs), additional n- and p-type dopants and metal contacts are deposited by vacuum thermal evaporation (VTE), which currently requires the cumbersome transfer of the device into a separate vacuum system.

We have now developed a vacuum evaporation unit that can be integrated into the base of a glove-box, thus facilitating in-situ deposition.

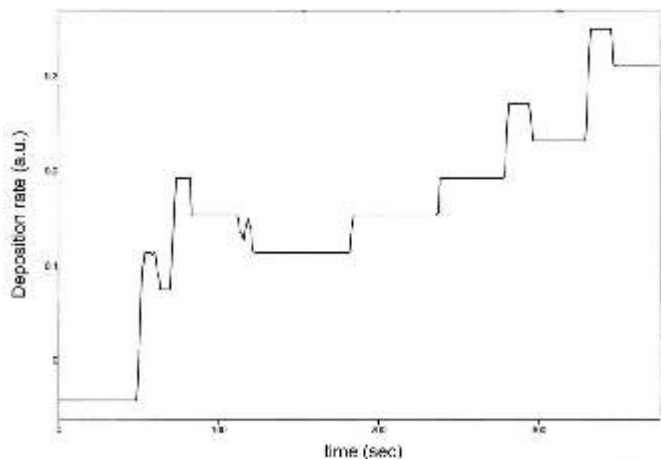
The turbo-pumped vessel has provision for several of our valved organic evaporators, thermal or e-beam metal-contact evaporators, plus a film-thickness monitor.

As shown below, the evaporator can be readily retrofitted by the simple provision of a circular hole in the base of the glove-box, which can be restored to its original condition, if required, by means of a supplementary sealing-flange supplied with the vacuum system.

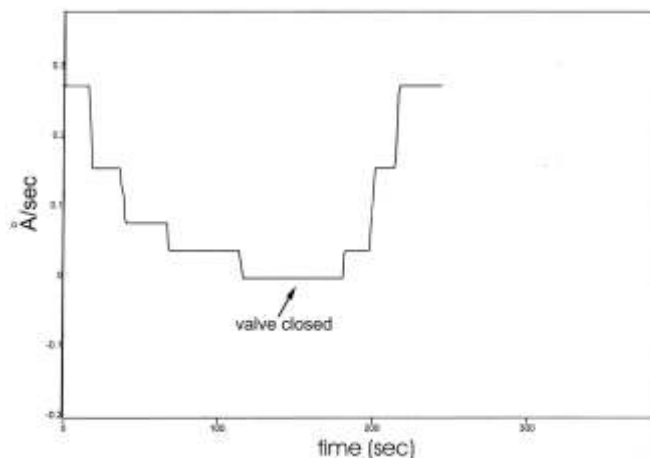


ORG50V Test Data: Control of the deposition rate using the valve at constant temperature

Pentacene 328°C

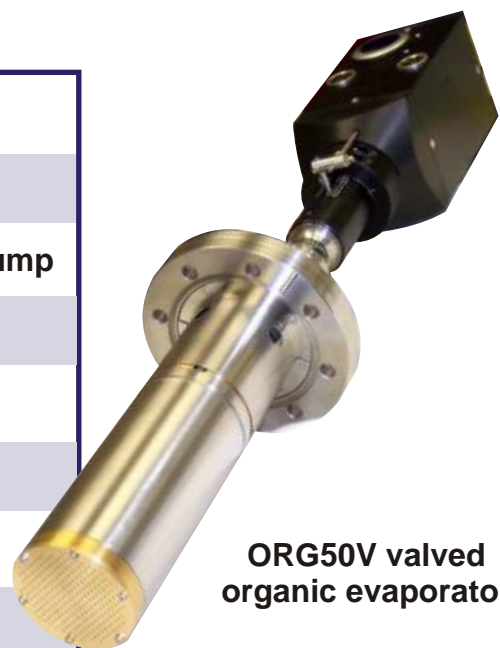


Fullerene C₆₀ 593°C



Specification - standard OLSYS100 system

Chamber design	Cylindrical stainless steel
Sample holder	2 inch diameter with shutter
Pumping	250l/s Turbo and backing pump
Base pressure	<10⁻⁷ mbar (O-ring sealed)
Sample loading	Via door inside glove box
ORG50V sources	2 included
Mini e-beam evaporator	1 included
Quartz crystal monitor	1 included



ORG50V valved organic evaporator

Specification- ORG50V Evaporator



Mini e-beam evaporator for deposition of metals (Model EGCO4 shown for co-evaporation)

Feedstock capacity	50cc
K-cell temperature	600°C (max)
Heater	PID autotune control
Valve dynamic range	>100:1
Beam diameter	Variable (selectable)
Flange mount	NW63CF/4½"
Bakeout (UHV compatible)	to 250°C
Valve control	Motorised, computer control

Oxford Applied Research Ltd.
 e-mail sales@oaresearch.co.uk
 Tel +44 1993 773575
 Fax +44 1993 702326



Crawley Mill, Witney
 Oxfordshire, OX29 9SP
 United Kingdom