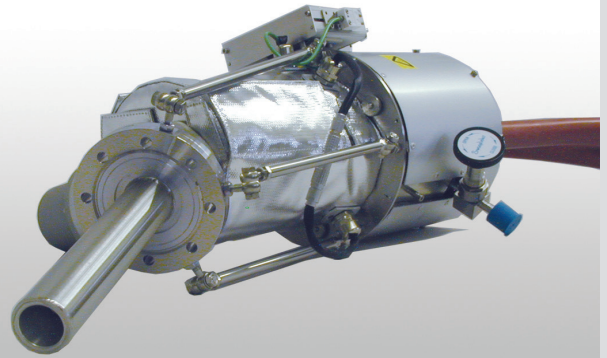


VALVED MERCURY EVAPORATION SOURCE HGS

- High throughput of up to 60g Hg/h
- large capacity 250 cm³ evaporator
- 3000 cm³ (40kg Hg) equalizing tank
- Larger capacity on request
- Easy and safe refilling procedure
- Compatible with most MBE systems



HGS 63-250, mercury source with 250 cm³ evaporator reservoir and integrated injector

The Valved Mercury (Hg) Evaporation Source HGS is designed for evaporation of elemental mercury in standard UHV or MBE systems.

The source consists of the 250 cm³ evaporator, heated by a thermostat, the heated valve and the heated injector unit which acts as the interface to the UHV system. Both components valve and injector are heated independently to avoid material condensation.

The source provides precise flux stability of better $\pm 0.1\%$ by $\pm 0.03\text{K}$ temperature control of the reservoir using external heating.

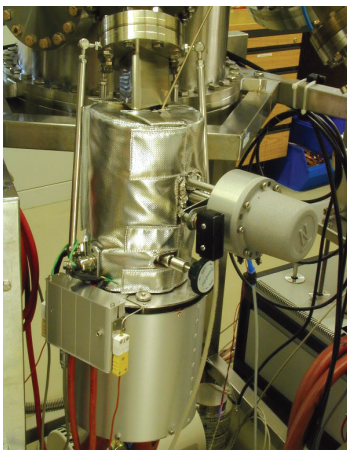
Precise longterm flux stability is achieved up to very high flux rates by a liquid level stabilization using an external equalizing tank. The evaporator reservoir is connected to the external tank which allows continuous hydrostatic refill of the evaporator reservoir in order to keep the liquid level within the evaporator constant.

The integrated pneumatic all metal valve allows rapid on/off switching of the Hg beam.

Easy and safe refilling is provided by an additional container which is mounted to the equalizing tank and which can be filled from air side.

The vacuum tight pneumatic valve allows venting the MBE system without breaking the vacuum inside the HGS evaporator.

The mercury source HGS has been developed in cooperation and is built under license of University of Würzburg (Germany) and with the advice of Dr. C.R. Becker from the University of Würzburg.



HGS 63-250 source for mercury evaporation with 250 cm³ evaporator mounted to UHV Chamber

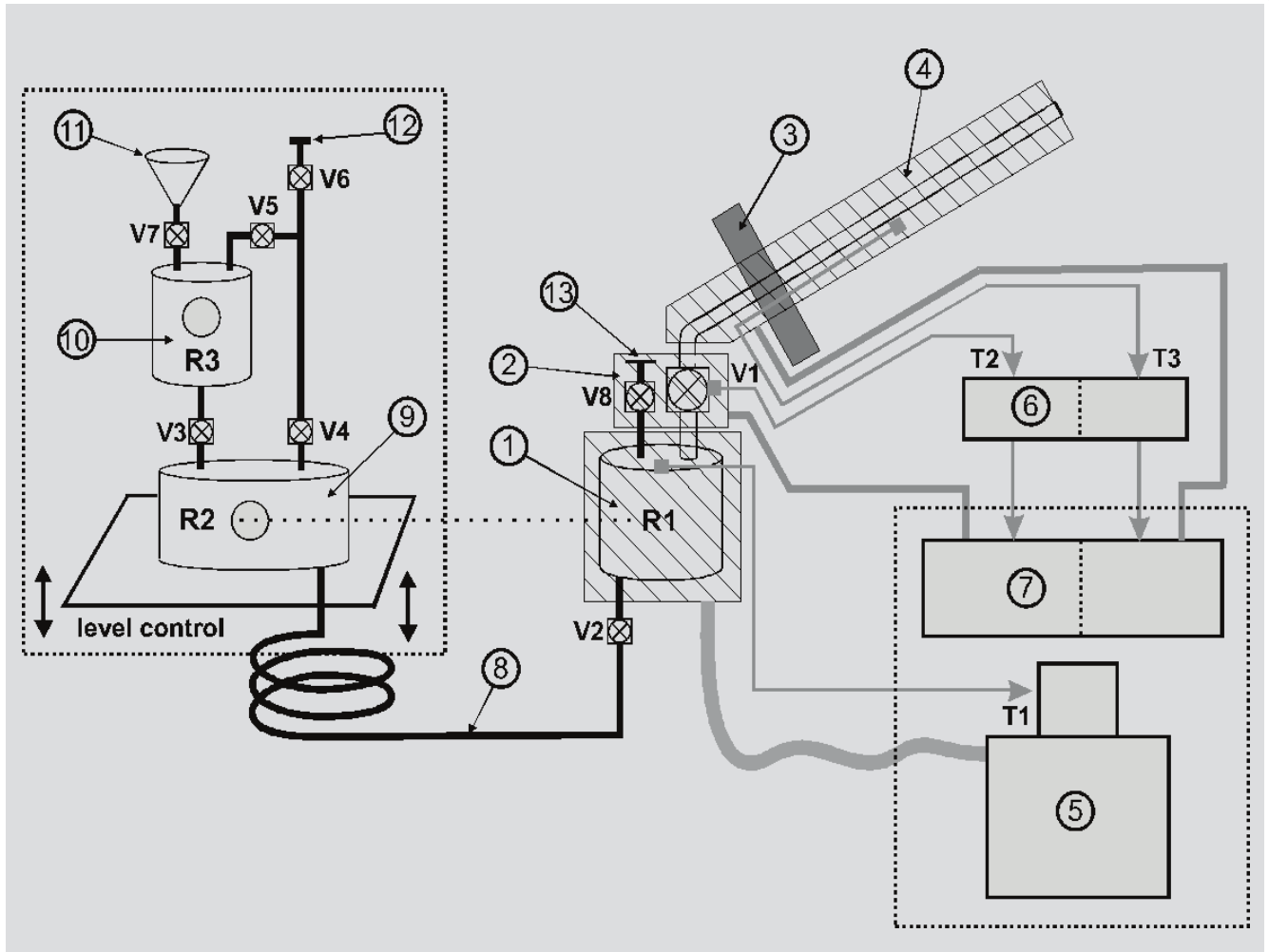


HGSU Control Unit for use with HGS source: electronic rack and table with liquid bath temperature controller and external reservoirs

Applications

Typical applications for the HGS are:

- II-VI Hg MBE, e.g. growth of Hg based compounds and heterostructures
- production of MCT devices, e.g. $\text{Hg}_{1-x}\text{Cd}_x\text{Te}$ infrared photodiodes



- | | |
|--|--|
| (1) Evaporator reservoir R1 | (8) Stainless steel pipe for hydrostatic mercury level control |
| (2) Heated valve unit including V1 and V8 | (9) Equalizing tank R2 with view port for visual mercury level control |
| (3) Mounting flange DN63CF (others on request) | (10) Refilling reservoir R3 |
| (4) Heated injector unit | (11) Refilling funnel |
| (5) Closed cycle heating thermostat | (12) Vacuum pump adapter flange for evacuation of the refilling |
| (6) External dual channel temperature controller | (13) VCR connector for pumping the evaporator reservoir |
| (7) Dual circuit heater power module HPM | |

References:

- [1] C.R. Becker, V. Latussek, G. Landwehr, L.W. Molenkamp, Physical Review B 68 035202 (2003)
 [2] Y.S. Gui, C.R. Becker et.al., Physical Review B 70 115328 (2004)
 [3] V. Latussek, C.R. Becker, G. Landwehr, Physical Review B 71 125305 (2005)