

# VALVED CORROSIVE SOURCE : VCOR

**THE ONLY FULL ONE-PIECE PBN SOURCE ON DN40CF ON THE MARKET. DESIGNED FOR CORROSIVE MATERIAL EVAPORATION : Sb, Mg, Te, Se, etc.**

- Performance, flexibility and reliability
- Highly reproducible flux control
- Very simple charge refilling
- Full reservoir loading capacity from 110 cc to 300 cc
- No delicate valve parts to dismantle
- Only 2 heating zone sources

The VCOR is a **compact valved source completely made from PBN** and dedicated for corrosive material evaporation. It is the only cell in which the vapor is never in contact with a metallic surface. Today **it is widely used for its stability and the convenience of the valve** for a whole series of materials such as Zn, Mg and CdTe whose evaporating temperature is lower than 750°C. **It is specifically designed to allow the valve to be positioned independently from the tip temperature** to limit valve re-calibration throughout the campaign. The loading capacity is fully exploited by using of **cylindrically shaped charges**.

The valve mechanism allows **fast and accurate flux adjustment** over a factor of 10 and can shut off the flux over more than 1 order of magnitude by simply rotating the thimble in conventional directions. **The independent tip filament** allows the vapor outlet and valve seat to be heated to higher temperatures than the evaporator. This **prevents the clogging of the vapor tube** during the operation. The reservoir and tip thermocouples are embedded within the oven assembly **to allow loading without disconnecting any leads**. Loading just requires the replacement of a CF63 gasket and there is no need to dismantle any delicate valve parts.

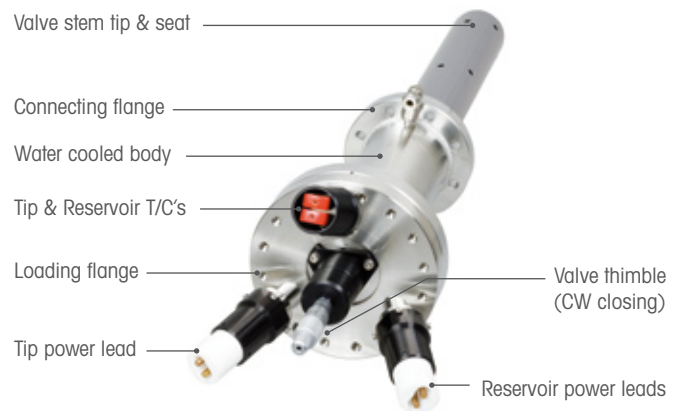
The all-PBN valve avoids the use of tantalum or other metals in the path of the process vapor (Sb, Te, etc.). The external body of the source is water-cooled. Our standard controller is used for **automatic valve positioning**.



**VCOR 300**

# SPECIFICATIONS

## SCHEMATIC VIEW OF THE SOURCE

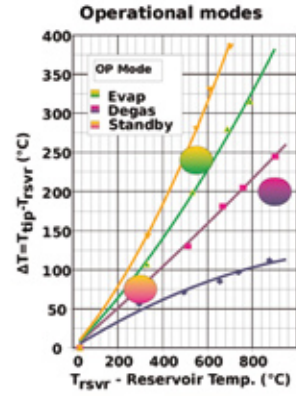


## CHARACTERISTICS

CELL MODEL	S40 VCOR 110	S63 VCOR 300
Filament	Two	
Heating filaments	Wire	
Thermocouple	Double C-type	
Crucible / Valve material	PBN / PBN	
Usefull capacity (Max load dimensions)	110cc (Ø20xH350mm)	300cc (Ø31xH500mm)
Mounting flange (min)	CF 40 ( 2.75")	CF 63 (4.5")
Reservoir typical operating temperature	450°C - 500°C	
Tip typical temperature	650°C - 900°C	
Temperature stability	+/- 0.3°C	+/- 0.1°C
VALVE CHARACTERISTICS		
Open conductance	2.0 l/s	10.0 l/s
Open / close ratio	>1000	
Valve actuator	Micrometer	
Stem stroke	2 mm (4 turns)	2.5 mm (5 turns)
TIP CHARACTERISTICS		
Max outgassing temperature	1000°C	1000°C
Power consumption (Tip @ 1000°C)	200W	300W
Power supply recommended	7.5A-100V12	12.5A-60V
Power output connector	Uniplug male Ø5	
Thermocouple connector	Omega NMP C-type	
RESERVOIR CHARACTERISTICS		
Loading Port	CF 63	CF 100
Max outgassing temperature	750°C	750°C
Power consumption (Res @ 750°C)	750W	1000W
Power supply recommended	7.5A-100V	7.5A-100V
Power output connector	Uniplug male Ø5	
Thermocouple connector	Omega NMP C-type	
Water connection	SWG Ø6 female	
Water flow	0.3l/mn - 4Bar max	

# RESULTS

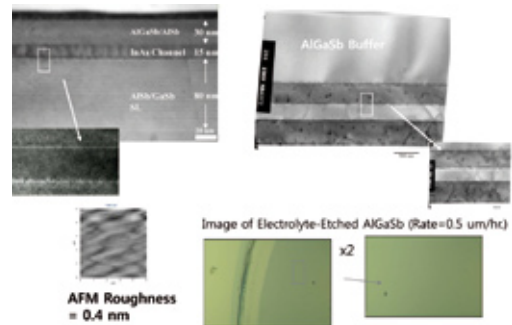
Thanks to the careful and unique design of the heaters, a wide range of temperature differential can be maintained between the tip and the reservoir. This ensures the achievement of optimum working conditions for the evaporation of different materials. The achievable temperature gradient between the tip and reservoir is shown in the plot that demonstrates the flexibility of the VCOR sources.



## Growth of a metamorphic HEMT structure on Si(001) substrate

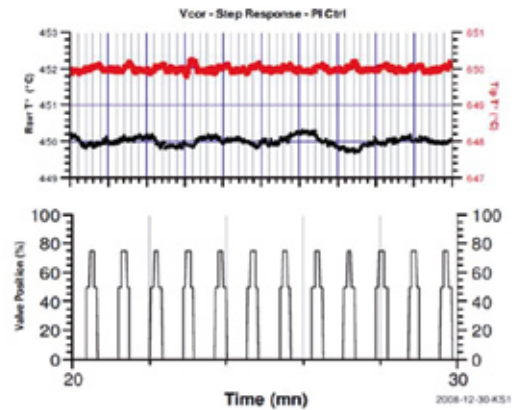
The surface morphology is excellent with a very low defect density. InAs/AlGaSb FET on Si(001) shows electron mobility at the room temperature of 16,000 cm<sup>2</sup>/V-s with a low defect density.

(Courtesy by Prof. Jae-Eung Oh / K.-M. Ko, Nanotech. 20 (2009))



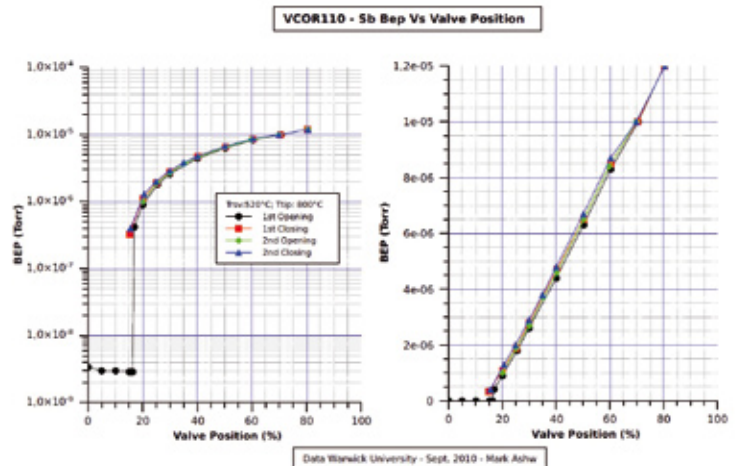
## Flux stability

Flux stability and reproducibility are demonstrated by the high temperature stability of both the reservoir and tip of the VCOR source. Highly reproducible flux control is also shown with a complete independence of temperature on the valve position.

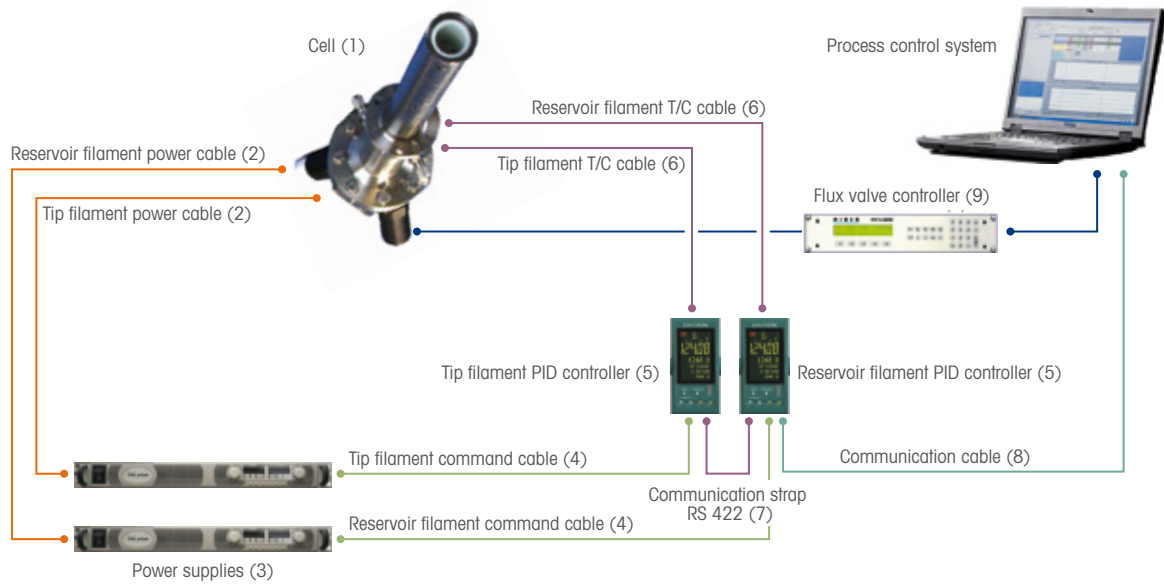


## Conductance function of the V110 Source with Sb

The cycle of opening/closing of the valve shows the reproducibility of the valve position.

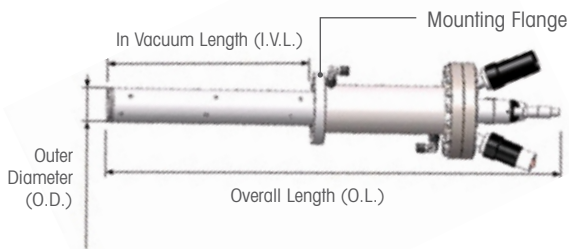


## OPERATING THE SOURCE



## ORDERING INFORMATION

### SOURCE

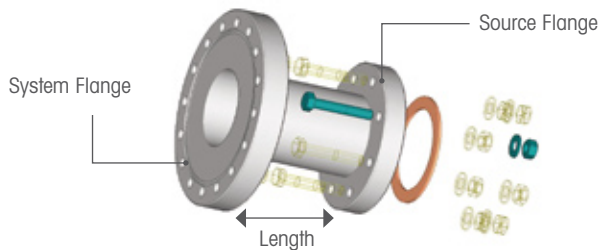


PRODUCT GUIDE		
Source gauge	Volume cc	
S40	VCOR	110
Technology		

SOURCE MODEL	P.N.	H2O*	FLANGE	I.V.L.	O.L.	O.D.
S40 VCOR 110	R235 004 8	Yes	CF 40 (2.75 )			
S63 VCOR 300	R235 100 4	Yes	CF 63 (4.5 )			
						Please contact Riber

\*Reservoir

### CONNECTIONS



PRODUCT GUIDE			
Source model	System connection flange	Length	
S40 VCOR 110	DN40CF	DN63CF	18
Source connection flange			

Riber CF anges and ittings are compatible with other Conat® style anges used by the other suppliers of the vacuum industry.

SOURCE MODEL	CONNECTION / LENGTH	P.N.	SYSTEM
S40 VCOR 110	DN40CF-DN63CF 18	R302 576 8	C21
S63 VCOR 300	DN63CF-DN63CF 60	R235 102 6	C21
S63 VCOR 300	DN63CF-DN100CF 81	R235 102 3	Epineat
S63 VCOR 300	DN63CF-DN100CF 34	R235 102 8	V100

Included with the nipple kit gasket for the source and the screws kit.

®Registered trade mark of Varian Inc., Palo Alto, California, USA. Nominal diameter DN 40 CF corresponds to ISO 3669 standard (Pneurop 6606).

# SOURCE SELECTION GUIDE

SYSTEMS	SOURCE MODEL	S40 VCOR 110	S63 VCOR 300
<b>RIBER</b>	MBE 32		
	Compact 12		
	Compact 21		
	EPINEAT		
	MBE 412 (4"/6")		
	MBE 49		
	MBE 6000		
	MBE 7000		
<b>VEECO / VARIAN</b>	GEN II		
	MOD GEN II		
	GEN 930		
	GEN 10		
	GEN 20		
	GEN 200		
	GEN 2000		
<b>VG</b>	V80		
	V90		
	V100		
	V150		
<b>OTHER SYSTEMS</b>		Riber sources are also available for use on systems from Eiko, Anelva, Ulvac, SVTA and DCA, as well as customs chambers. Contact Riber for details.	

- RECOMMENDED**
- CONTACT RIBER FOR MORE DETAILS**
- INAPPROPRIATE**



**VCOR 110**

## TECHNOLOGICAL LEADERSHIP

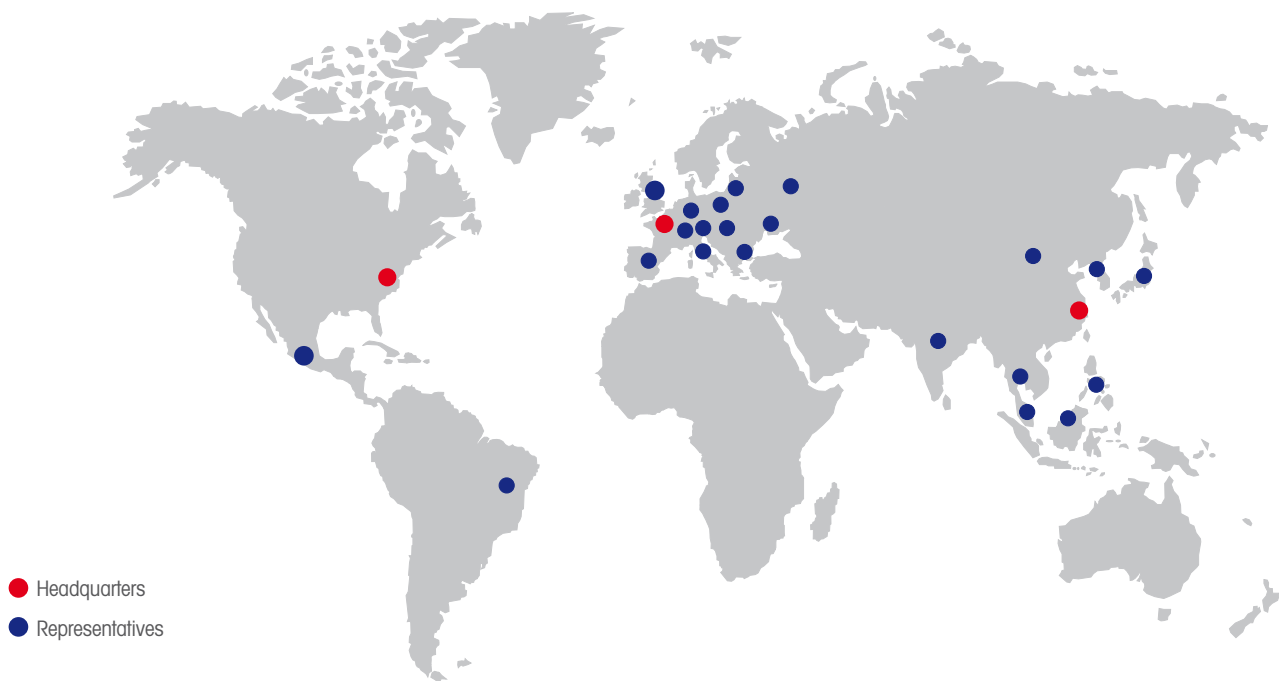
Riber is the world leading supplier of MBE processing equipment and related services.

In total, 750 of our MBE systems have been installed with at least one system in each of the 35 countries with which MBE is involved. This represents 75% of the global market.

Capitalizing on its 30 years of experience, the company's core philosophy is to design systems in close association with customers. Riber has invented and designed major features which are now found in all MBE systems.

Riber plays a key role in the development of MBE technology, providing customers with solutions from equipment to epitaxial growth.

## WORLDWIDE PRESENCE



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