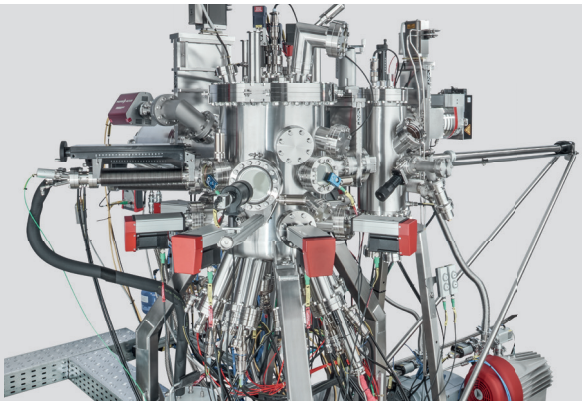
MBE
KOMPONENTEN | DR. EBERL

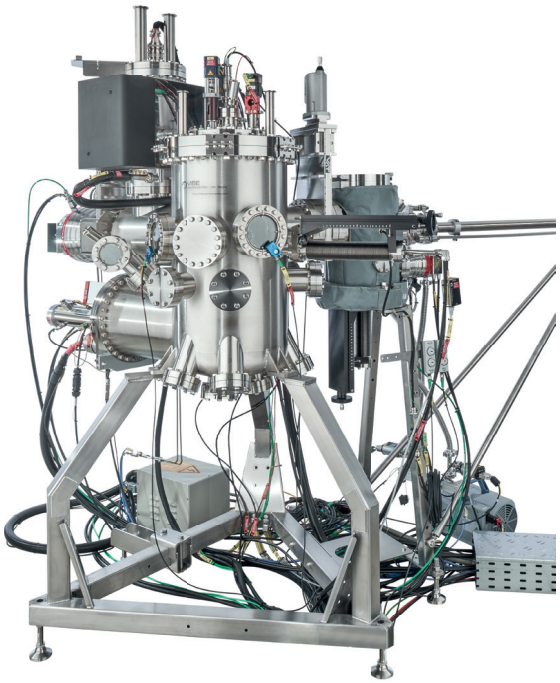
OCTOPLUS 350 / MBE SYSTEM

- Compact, versatile MBE system for R&D
- Applications: III-V, II-VI or Oxide-MBE
- Up to 8 source ports, various options including e-beam evaporators
- Wide range of source options
- Horizontal substrates up to 2''
- Base pressure < 8 x 10-11 mbar
- In-situ characterization capability



OCTOPLUS 350 MBE System

The OCTOPLUS 350 system is ideally suited for III-V, II-VI and other compound semiconductor material applications. The OCTOPLUS 350 system can be easily adapted to small wafer segments as well as to 1, 2 inch wafers. A version with a manipulator for flag shaped scientific sample plates is also available. The field-proven vertical chamber design of the OCTOPLUS 350 plus various state-of-the-art components allow layer by layer precise MBE growth.



OCTOPLUS 350 EBV version

Outstanding features of the OCTOPLUS 350 are the high reliability and versatility of the system and its compactness. These features make the OCTOPLUS 350 system particularly suited for applications in research and development. Nonetheless specific production processes are also covered.

The standard version of the OCTOPLUS 350 comprises 8 source ports with 4.5 inch (DN63CF) flange size. The DN63CF effusion cell ports are equipped for use with a linear shutter system.

A version with horizontally mounted 6-pocket electron beam evaporator and 4xDN63CF ports allows research on layers containing high temperature materials such as W, Ta, Nb, Mo, Pt, that can be best evaporated with an electron-beam evaporation. This can be used for metallization or growth of compounds such as Transition metal dichalcogenides.

A rapidly pump-down load lock chamber with a horizontal working transfer rod system allows easy substrate introduction without breaking the vacuum of the MBE chamber.

We provide different kinds of effusion cells, valved cracker sources, gas sources and substrate manipulators according to your requirements. A well-manageable in-situ characterization is obtained by using beam-flux-gauges, RHEED systems or quadrupole mass analyzers (QMA). The system comes with a MBE growth software that controls all shutters, cell- and manipulator temperatures, as well as related process parameters such as chamber pressure and cryopump temperatures. Maximum operation reproducibility and safety is guaranteed.

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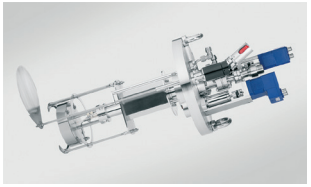
Technical Data

Size of deposition chamber	350 mm I.D.
Base pressure	< $8x10^{-11}$ mbar
Pumping	cryopump, turbopump, TSP or ion getter pump
Cooling shroud	LN2 or other cooling liquid on request
Substrate heater temperature	up to 800°C, 1000°C or 1400°C
Substrate size	up to 2" diameter
Bakeout temperature	up to 200°C
Source ports	up to 10 source ports DN63CF and DN100CF
Source types	effusion cells, e-beam evaporators, sublimation
	sources, valved cracker sources, gas sources
Shutters	soft-acting linear or rotary shutters
In-situ monitoring	ion gauge, QCM, pyrometer, RHEED, QMA
Sample transfer	linear transfer rod, manual or semi-automatic
Load lock	magazine with 6 substrates turbo-pumped
MBE control software	Tusker
Service	system installation and acceptance testing
MBE training	by MBE experts

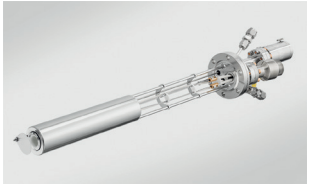
Examples for applications and corresponding sources

Application	Effusion Cells	Sublimation Sources	Valved Sources	Plasma Sources	E-Beam Evaporators
Source type	WEZ, NTEZ	SUKO, SUSI	VACS, VGCS	FMP	EBVV
	OME, HTEZ	HTS, DECO	VTCC, VSS		
III/V (As, Sb, P)	Ga, In, Al, B	C, Si doping	As, P, Sb		
II/VI	Zn, Cd, Be		S, Se, Te	N-doping	
IV	Ge, Sn, Pb	B, P, Sb doping			Si, Ge
GaN	Ga, In, Al			N	
Metals	Cu,Al,Ni,Co,…				Pt,Ta,Pd,Mo,W
Transition metal	Fe, Co, Ni, Mn		S, Se, Te		Ta, Mo, W, Nb, Hf
Chalcogenides					
Topological Insulators	Ge, Sb, Bi,		Se, Te, Sb		B
	GeSb, Fe, Cr				
Graphene / Silicene		C, Si			
Oxides	Fe, Ni, Mn, Bi			O	
	Eu, Ga,…				
Thin Film Solar Cells	Cu, Ga, In, Zn		S, Se		
	NaF, Fe, Sn				

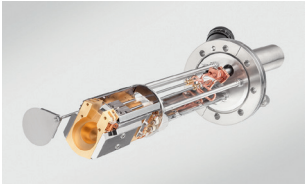
MBE components typically used in OCTOPLUS 350:



Substrate Manipulator



Effusion Cell



E-Beam Evaporator

Valved Cracker Source

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