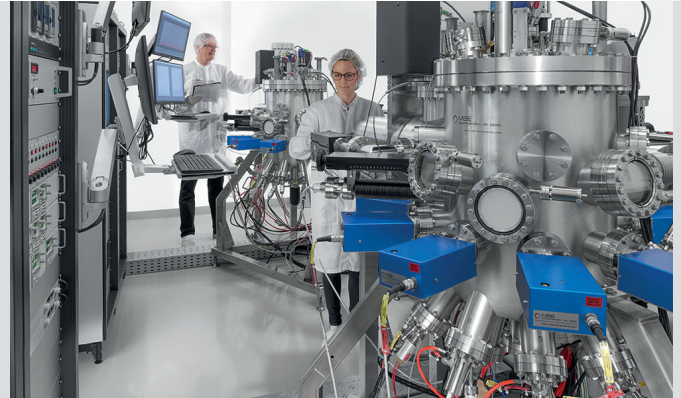


OCTOPLUS 400 / MBE SYSTEM

- Compact, versatile MBE system for R&D
- Applications: III-V, II-VI or other materials
- 10 source ports, various source options including e-beam evaporators
- 1", 2", 3" or ¼ wafer substrate size
- $<5 \times 10^{-11}$ mbar base pressure
- LN2 cooling shroud
- In-situ monitoring



OCTOPLUS 400 MBE System



OCTOPLUS 400 control system

The OCTOPLUS 400 series is a very compact and versatile MBE system with low running costs. It can be integrated into small size R&D laboratories due to its small footprint. It provides convenient source access and excellent serviceability due to its open design. High quality epitaxial layers on substrates up to 3 inch in diameter can be deposited.

The OCTOPLUS 400 system is ideally suited for cutting edge research on a wide variety of materials including GaAs, phosphides, antimonides, nitrides, graphene and topological insulators.

It can be easily adapted to small wafer segments as well as to 1, 2 or 3 inch wafers. The field-proven vertical chamber design of the OCTOPLUS 400 plus various state-of-the-art components allow layer by layer precise MBE growth.

The MBE process control software integrates easy recipe writing, automated growth control and extensive data recording.

All our MBE products are designed and manufactured by Dr. Eberl MBE-Komponenten GmbH. The products are cleaned and assembled in our own clean room environment. Each component is tested and outgassed under UHV conditions. Helium leak testing and operation at maximum conditions is performed to reach the high standard of our products.

Dr. Eberl MBE-Komponenten GmbH specializes in customized products. Due to more than 30 years experience in MBE technology we are able to offer individually designed system solutions which follow our customers' needs.

The MBE systems are installed and acceptance tested by experienced MBE PhD experts. Extensive customer training is offered as an additional option.

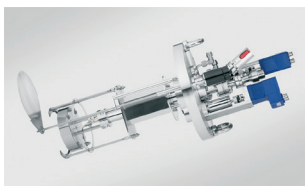
Technical Data

Size of deposition chamber	450 mm I.D.
Base pressure	$< 5 \times 10^{-11}$ 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 3" diameter
Bakeout temperature	up to 200°C
Source ports	10 source ports DN63CF (O.D. 4.5")
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	turbo-pumped, magazine with 6 substrates
MBE control software	Tusker
Service	system installation and acceptance testing
MBE training	by PhD MBE experts

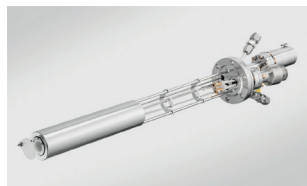
Examples for applications and corresponding sources

Application	Effusion Cells	Sublimation Sources	Valved Sources	Plasma Sources	E-Beam Evaporators
Source type	WEZ, NTEZ OME, HTEZ	SUKO, SUSI HTS, DECO	VACS, VGCS VCS, VSCS		EBVV
III/V (As, Sb, P)	Ga, In, Al, Be	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
Topological Insulators	Ge, Sb, Te, Bi, GeSb		Se, Te		B
Graphene / Silicene		C, Si			
Oxides	Fe, Ni, Mn, Bi, Eu, Ga, ...			O	
Thin Film Solar Cell	Cu, Ga, In, Zn, NaF, Fe, Sn		S, Se		

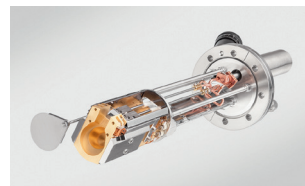
MBE components typically used in OCTOPLUS 400:



Substrate Manipulator



Effusion Cell



E-Beam Evaporator



Valved Cracker Source