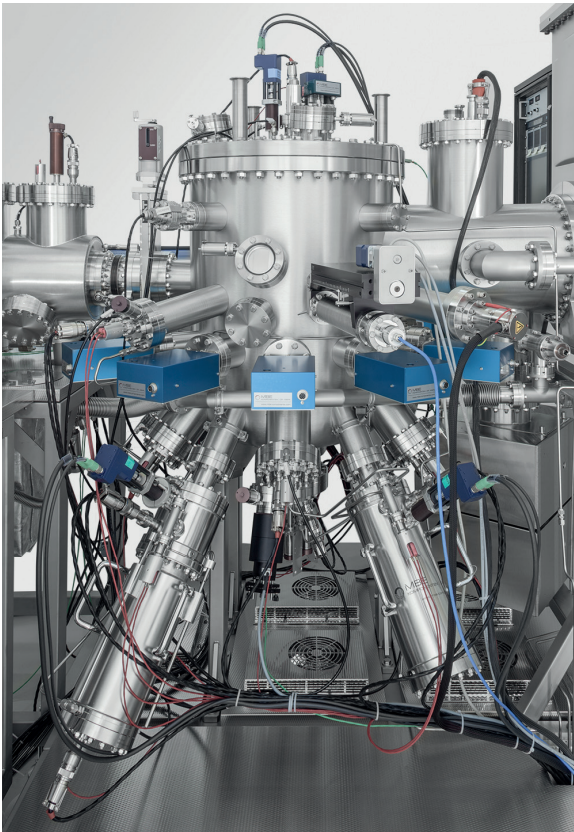


OCTOPLUS 500 / MBE SYSTEM

- MBE system for R&D and production processes
- Applications: III-V, II-VI or other materials
- 12 source ports, various source options
- 2", 3" or 4" substrate size
- $<5 \times 10^{-11}$ mbar base pressure
- LN2 cooling shroud
- In-situ monitoring



OCTOPLUS 500 MBE System with control rack



OCTOPLUS 500 MBE System

The OCTOPLUS 500 series is a state-of-the-art MBE system with up to 14 effusion cell flanges. High quality epitaxial layers on substrates up to 4" in diameter can be deposited.

OCTOPLUS 500 provides convenient source access and excellent serviceability due to its open design. It is ideally suited and field proven for cutting edge research on a large variety of materials including GaAs, phosphides, antimonides, nitrides and topological insulator deposition.

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 are performed to reach the high standard of our products.

Dr. Eberl MBE-Komponenten GmbH specializes in customized products. Due to our 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.

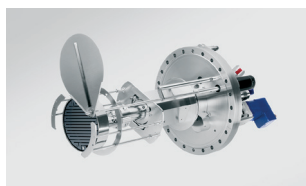
Technical Data

Size of deposition chamber	550 mm I.D.
Base pressure	< 5x10 ⁻¹¹ mbar
Pumping	TSP, ion getter pump, cryopump and/or turbopump
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 4"
Bakeout temperature	up to 200°C
Source ports	12 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 in face-down geometry
Load lock	magazine with 6 or more substrates turbo-pumped
MBE control software	Tusker
Service	system installation and acceptance testing
MBE training	by PhD MBE experts

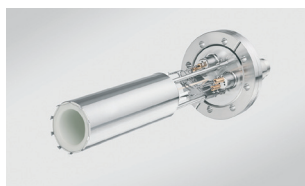
Examples for applications and corresponding sources

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	Ga, In, Al	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 / Magnetics	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 Cells	Cu, Ga, In, Zn, NaF, Fe, Sn		S, Se		

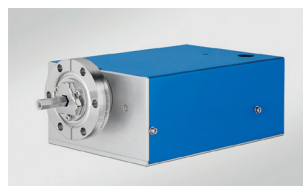
MBE components typically used in OCTOPLUS 500



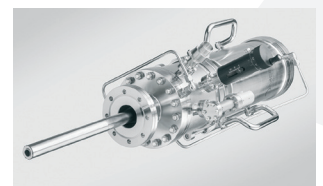
Substrate Manipulator



Effusion Cell



Linear Shutter



Valved Cracker Source