OCTOPLUS 500 / MBE SYSTEM

- State-of-the-art MBE system for research and production processes
- Applications: III-V, II-VI or other materials
- 12 source ports, various source options
- Substrate sizes 2", 3" or 4" (face-down)
- Strong UHV pumping system
- LN2 cooling shroud
- In-situ monitoring



OCTOPLUS 500 MBE System



OCTOPLUS 500 EBV MBE System

The OCTOPLUS 500 EBV option can be used as a dedicated Si-Ge MBE with two horizontal 100 $\rm cm^3$ EBV sources.

A version with one horizontally mounted 6-pocket electron beam evaporator allows working with layers containing high temperature materials such as e.g. W, Ta, Nb, Mo, Pt.

This can be used for metallization, growth of superconductors or even transition metal dichalcogenides. The OCTOPLUS 500 system was developed for the growth of high quality III-V heterostructures on 4-inch Si substrates.

The MBE chamber is equipped with up to 12 effusion cells or gas injectors for deposition or surface treatment.

The substrate manipulator applies to pyrolytic graphite or alternatively tungsten or tantalum heaters.

The OCTOPLUS 500 MBE system is field-proven and ideally suited for III/V, II/VI and other heterostructure growth for applications in research and production processes.

Outstanding features of the OCTOPLUS 500 are the high reliability and versatility of the system.

The standard version of the OCTOPLUS 500 comprises 12 radially arranged source ports.

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

The OCTOPLUS 500 is available with an EBV option to replace some of the effusion cell flanges and instead mount horizontal electron beam evaporators (see figure on the left).

O MBE Komponenten | dr. eberl

Technical Data

Size of deposition chamber	550 mm l.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	6x DN63CF + 6x DN100CF or EBV + 4x DN63CF + 5x DN100CF			
	or 2x EBV + 4x DN63CF + 4x 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	Sublimation	Valved	Plasma	E-Beam
	Cells	Sources	Sources	Sources	Evaporators
Source type	WEZ, NTEZ	SUKO, SUSI	VACS, VGCS	FMP	EBVV, EBVM, EBV
	OME, HTEZ	HTS, DECO	VCS, VSCS		
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			Ν	
Metals / Magnetics	Cu,Al,Ni,Co,				Pt,Ta,Pd,Mo,W
Topological Insulators	Ge, Sb, Te,		Se, Te		В
	Bi, GeSb				
Graphene / Silicene		C, Si			
Oxides	Fe, Ni, Mn, Bi,			0	
	Eu, Ga,				
Thin Film Solar Cells	Cu, Ga, In, Zn,		S, Se		
	NaF, Fe, Sn				

MBE components typically used in OCTOPLUS 500



Substrate Manipulator



Effusion Cell







Valved Cracker Source

Dr. Eberl MBE-Komponenten GmbH Josef-Beyerle-Str. 18/1 71263 Weil der Stadt, Germany Fon Mail Web +49 7033 6937-0 info@mbe-components.com www.mbe-components.com