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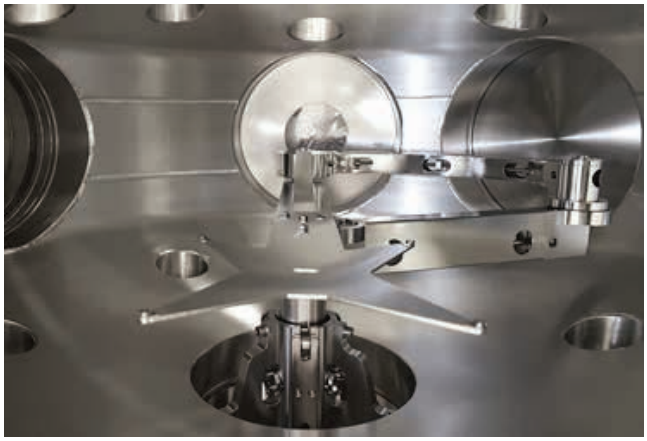
OCTOPLUS 600 / MBE SYSTEM

- MBE system for R&D and production
- Applications: III-V, II-VI and other material heterostructures
- 12 source ports, multiple source options
- Substrate sizes: 4“, 6“ or 3x2“
- $<5x10^{-11}$ mbar base pressure
- LN2 cooling shroud
- In-situ monitoring

OCTOPLUS 600 MBE system with control rack



Fully automated wafer transfer by central handling arm.

Options for OCTOPLUS 600:

- Additional load-lock, heated station, or buffer chambers
- Fully automated wafer transfer system
- Wide range of components, e.g., effusion cells, e-beam-evaporators, sublimation sources, valved cracker sources, gas sources, manipulators
- Software/hardware control system
- Pumping system (cryopumps, ion getter pumps, etc.)
- In-situ characterization tools, e.g. RHEED, BFM, Quartz, Pyrometer
- In-situ monitoring

The OCTOPLUS 600 system is designed for the high quality MBE growth of III-V, II-VI and other heterostructures on multi wafer 3x2 inch or single wafer 4 inch or 6 inch substrates. Its deposition chamber can be equipped with up to 12 effusion cells and valved crackers.

Substrate manipulators with either pyrolytic graphite or, alternatively, tungsten or tantalum heaters are used. The OCTOPLUS 600 MBE system is field-proven and ideally suited for ambitious applications both in research and production.

High reliability and versatility are outstanding features of the OCTOPLUS 600 system.

With the standard version already comprising 12 radially arranged source ports, the OCTOPLUS 600 can be further expanded with 3 additional source ports on request. A rapid pump-down load lock chamber with wafer magazine, a heated station and the fully automated central transfer (see figure on the left) allow easy substrate introduction and handling.

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Technical Data

Size of deposition chamber	600 mm I.D.
Base pressure	< $5x10^{-11}$ mbar
Pumping	TSP, ion getterpump, cryopump and/or turbopump
Cooling shroud	LN2 or other cooling liquid on request
Substrate heater temperature	up to 800°C, 1000°C or 1200°C
Substrate size	4", 6" or multi-wafer 3x2"
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 shutters with low flux transient
In-situ monitoring	ion gauge, QCM, pyrometer, RHEED, QMA
Sample transfer	automated transfer with wafer face-down geometry
Load lock	magazine with 10 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	SUKO, SUSI	VACS, VGCS		EBVV
	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			N	
Metals / Magnetics	Cu,Al,Ni,Co,…				Pt,Ta,Pd,Mo,W
Topological Insulators	Ge, Sb, Te,		Se, Te		B
	Bi, GeSb				
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 600


Substrate Manipulator


Effusion Cell


Linear Shutter


Valved Cracker Source

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