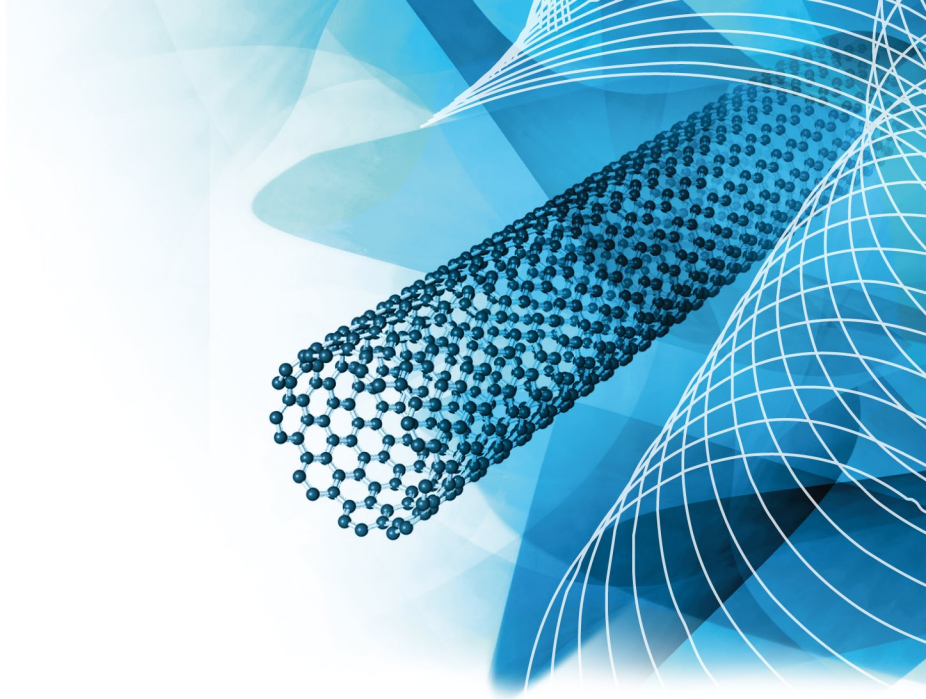
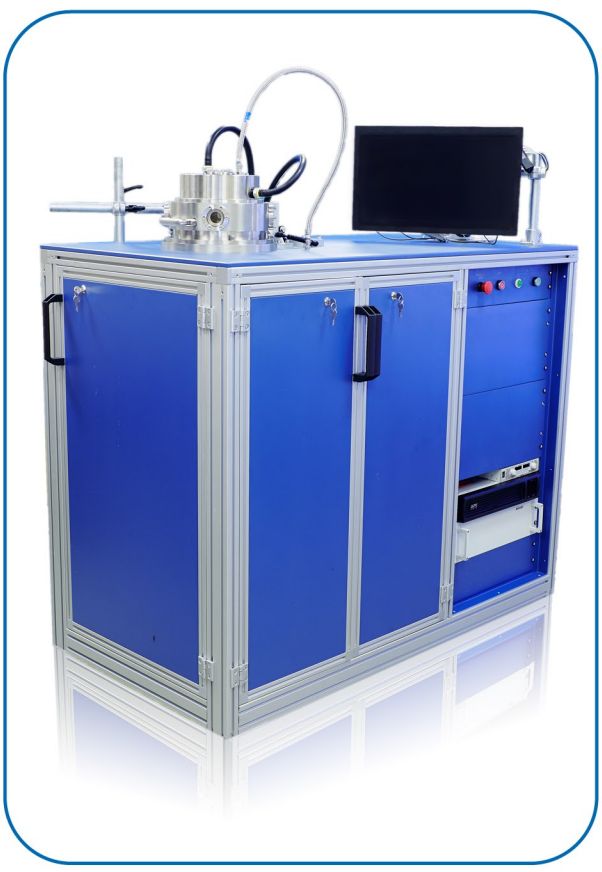
OptoSystems



ARDIS 300

Microwave plasma chemical vapor deposition system for high quality single crystal and polycrystalline diamonds



APPLICATIONS

Gems

- Quality achieved allows growing of gem-quality SCDs

Electronics

- Heat sinks for semiconductor lasers, microelectronics
- Acoustoelectronics
- MEMS
- Detectors for ionizing radiation
- Field Effect Transistors
- Surface Acoustic Wave devices

Optics

- Windows for high power IR lasers
- Windows for optical devices working in corrosive media
- Raman lasers
- Structural elements non-absorptive to radiation

Medicine, Ecology

- Biosensors
- Biocompatible coatings
- Corrosion resistant electrodes for water cleaning electrolysis (B and N doped diamond)

Ardis-300

Specifications	
Reactor chamber	
Type	Coaxial cavity resonator
Chamber material	Stainless steel
Stage material	Molybdenum-shielded copper
Water cooling for chamber walls and stage	
5 diagnostic 70 mm CF quartz windows	
Easy to open camera cover	
Specialized molybdenum substrate holders	
Microwave System	
MW power supply	6 kW, water cooled
Magnetron	6 kW, water cooled
Insulator	Circulator and dummy load, water cooled
3-stub waveguide tuner	
Reflected power microwave detector	
Vacuum System	
Dry pump	$\leq 3 \times 10^{-2}$ torr
Turbomolecular pump (optional)	$\leq 5 \times 10^{-6}$ torr
Operating pressure	20 - 500 torr
Stainless steel vacuum fittings	
Vacuum filter with interchangeable cartridge	
Pneumatic controls valves and pressure regulators	
Gas System	
Swagelok ¼" stainless steel fittings	
Mass Flow Regulators	
4 gas lines (5th optional)	
H_2	1000 sccm
O_2	50 sccm
CH_4	200 sccm
N_2	1000 sccm

Cooling system
The internal cooling circuit
Coolant temperature 20-25 °C
Monitoring of flow rate and temperature of all cooling lines
Air-cooled chiller (Optional)
Electric System
Voltage AC 3-phase 380/220 V, 50 Hz
Power consumption up to 12 kW
The emergency stop button

Hardware & Software
Industrial panel PC
Software parameter control
Windows OS
Additional options
Z-motion for central area of stage
Dual-band pyrometer
DC Bias to substrate holder - 0-300 V or 0-600 V

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