NANO-MASTER PECVD and PE-MOCVD SYSTEMS

NPE-4000 with ICP Source (Selective Growth of CNT)

Description:

NPE-4000 PECVD system is capable of depositing high quality SiO_2, Si_3N_4, or DLC films on up to 8" diameter substrate sizes. To generate plasma, it uses RF shower-head electrode or Hollow Cathode RF plasma source with Fractal Gas Distribution. It is a stand alone PC controlled system. The platen can be biased with RF or pulsed DC and it is heated resistively or cooled with chilled water circulation. The aluminum chamber is evacuated to low 10^{-7} torr pressure using 200 l/sec. Turbomolecular pump backed with 3.5 cfm mechanical pump. Standard unit comes with one carrier gas and two reactive gas lines and with optional mass flow meters. NPE-4000 system is designed for most demanding applications in R&D environments. Its unique gas distribution system and the planar Hollow Cathode Plasma source makes it possible to meet wide range of requirements such as plasma density, uniformity, and separate activation of reactive species to cover broadest possible deposition parameters.

Applications:

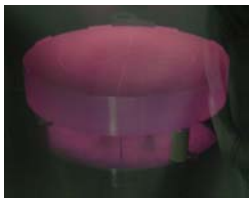
- SiO_2, Si_3N_4, DLC, other Film
- Selective Growth of CNT
- Plasma Induced Surface Modification
- Plasma Cleaning (NF_3)
- Plasma Polymerization

Specifications:

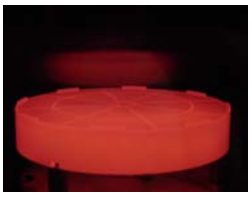
- Stand alone PC controlled system
- RF shower head or HCD plasma source
- Up to 8" diameter substrates
- RF biased substrate holder
- Water cooled platen
- One carrier gas and two reactive gas input with mass flow controllers
- Turbomolecular pump
- Vacuum 10^{-7} torr range base pressure
- Pneumatically controlled valves

HCD P100 Plasma Source:

- 5" or 8" Multijet Planar Hollow Cathode source
- 600 watts water cooled RD operation
- Fractal monomer and carrier gas feed
- High density plasmas 10^{13} ions/cc
- Excellent uniformity and low contamination

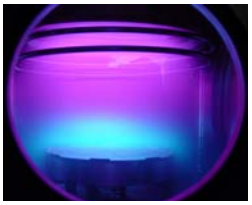


8" Platen at 600 °C

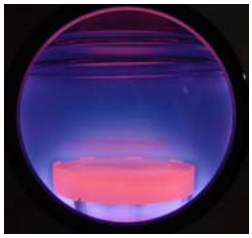


8" Platen at 700 °C

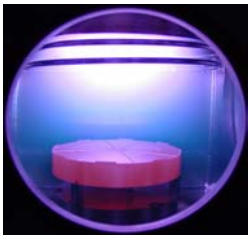
300 W RF Bias



-1000 V DC Bias, 500 °C, ICP On



-500 V Bias, 700 °C, ICP Off



700 °C, ICP On

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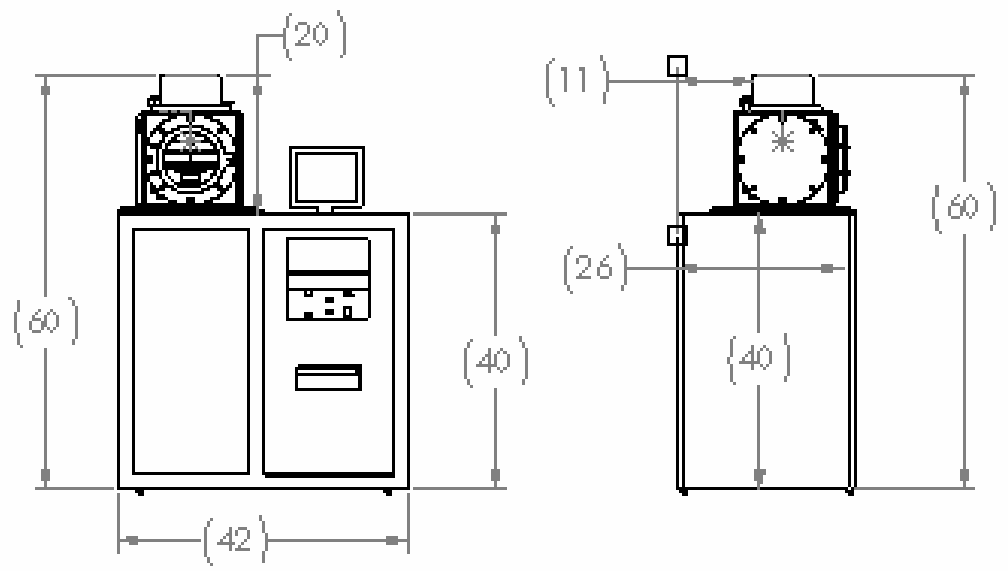

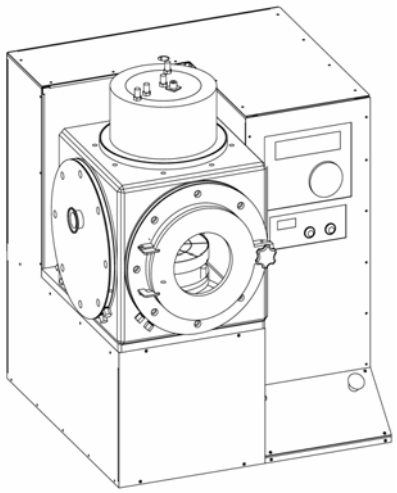

NPE-3000 Table Top PECVD System

System Options:

- HCD Plasma Source 5” or 8”
- Electropolished stainless steel chamber
- Heated platen
- Door for wafer load unload with 5” window
- Load lock
- Adjustable height platen
- Corrosive pump package
- Additional gas lines
- Heated gas lines
- HMDS or heated liquid delivery system
- 1 kw RF source
- Pulsed DC power supply
- Langmuir probe

NMC-3000 PE-MOCVD System:
- Five Bubblers
- Heated Gas Lines
- 950 °C Platen
- RF Plasma Source
- 5 10^{-7} Torr Base Pressure

General Specifications:

Platen size	8”
Source diameter	5” or 8”
Number of gas feeds	4 (2 reactive, 1 carrier, 1 vent)
Source to platen distance	2” (or adjustable)
Vacuum	Low 10^{-7} torr range, 200 l/sec turbo with 3.5 cfm mech.
Maximum platen temp.	400 ºC
RF power supply source	600 W, 13.5 MHz
RF bias	300 W, 13.5 MHz

Facilities Required:

Power	110 V, 40 Amp, 50/60 Hz
Chilled water	15 ºC, 10 liters/min
Process gasses	Ar, N_2, SiH_4, NH_3, CH_4, NF_3, HMDS, etc.
Exhaust	For mechanical pump
Dry air	100 psi

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