

SPECIFICATIONS

Ref. (Quotation No.) : _____

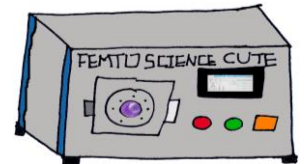
Model : **CUTE-1MPR** Variable Frequency Plasma Processing System

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1. General Description

The CUTE series is a damage-free plasma process system by its unique design of highly stable and homogeneous glow discharge plasma generation.

It can be used in cleaning work surfaces, enhancing hydrophilic & hydrophobic properties, inter-layer adhesiveness, and etching in Microfluidics, Tissue Engineering, Graphene & 2D Materials, and other Nano science & Micro-electronics applications.



2. Major Modules

1) Process Chamber

a. Plasma mode : (Reactive) Neutral Domination*

b. Type : Rectangular, horizontal chamber with door

c. Chamber inner

- Size : 140mm x 200mm x 110mm (W x D x H)
- Finishing : By precision lapping & ultrasonic cleaned

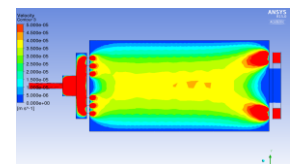
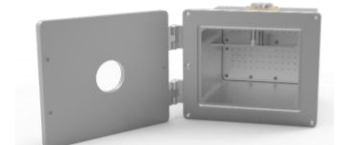
d. Minimum leakage design

- Chamber is machined out of solid Aluminum block. (Welding free!)
- O-rings : Specially coated (Silica encapsulated) Viton
- Dovetail grooves for all seals
- Vent screws for inner chamber

e. Uniform gas flow design (Patent No. 10-1697205)

- Gas shower head integrated door
- Multi-perforated plate between plasma region and buffer
- Zone separation (Plasma Zone & Buffer Zone)

f. Viewport : Dia. 45mm, glass window

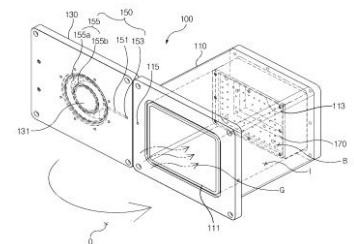


2) Generator

a. Frequency : 20 ~ 100kHz with 10kHz increment

b. Power : up to 100W with free adjustment

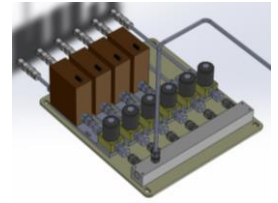
c. Automatic impedance matching : By DSP on board feedback monitoring & control



3) Gas Line Package

a. Process gas line

- Gas channel : 1 x gas line (User define the gas species, otherwise Oxygen)
- Additional gas line : 2 x empty gas line for future up-grade
- Gas flow control : By MFC (Mass Flow Controller)
- Stainless steel gas line with 1/4" Swagelok fittings as standard



b. Purge (Flush) line

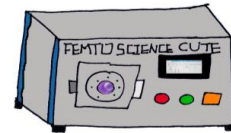
- 1 x purge line (purge gas can be defined by user - Nitrogen, CDA, Air,)
- Stainless steel gas line with 1/4" Swagelok fittings as standard

c. Vent line

- 1 x vent line (vent gas can be defined by user - Nitrogen, CDA, Air,)
- Stainless steel gas line with 1/4" Swagelok fittings as standard

d. Gas manifold block

- 5 x input / 1 x output gas manifold block
- 1/4" Swagelok fittings as standard



e. Mass Flow Controller

- Flow rate : up to 100sccm (User define the flow rate, otherwise 100sccm)
- Flow rate control range : 2 to 100% of full scale
- Response speed : Less than 1sec
- Accuracy : $\pm 1\%$ of full scale
- Linearity : $\pm 0.5\%$ of full scale
- Operating temperature : 5 to 50°C

4) Vacuum & Pumping Package

a. Pressure measurement

- Vacuum sensor : Vacuum Transmitter
- Measurement range : Atm $\sim 5 \times 10^{-5}$ Torr



b. Vacuum pump

- Type : Oil rotary pump
- Pumping speed : 80l/min@50Hz (100l/min@60Hz)
- Ultimate pressure : 1×10^{-3} Torr

c. 1 x Electromagnetic pumping valve

d. 1 x ea of 2m, stainless steel flexible pipe as pumping connection

e. 1 x ea of 2m, polymer tube for exhaust

f. 1 x ea of oil mist filter

5) Process Controller

- a. DSP on board signal controller
- b. 16 x Input & 16 x Output port
- c. 10 x A/D & 10 x D/A, 16 bit Resolution
- d. RS232 Communication
- e. Monitoring LEDs

6) Operation S/W and user's interface

a. Operation Panel

- Controller : Industrial 7" Touch PC
- OS : Win CE

b. Operation mode

- Fully automatic by pre-stored recipes
- Manual (Semi automatic) through touch panel

c. Two-level Settings

- Setting by operator
- Setting by supervisor (entered by Password)

d. Cycle purging & Leak checking

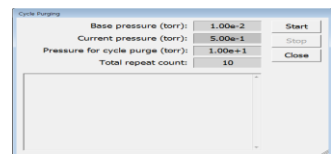
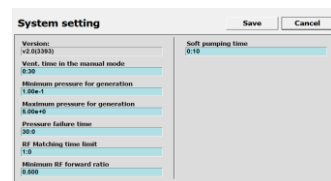
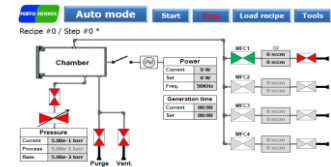
- Chamber leak level checking (entered by Password)

e. Recipe management

- Up to 10 x process recipes can be stored
- Each recipe can be consisted of 10 process steps

f. Other supports

- Support graph viewer including control
- Realtime display for status & error monitoring



Gas Name	Value	Power Name	Value
MFC #1	0%	Power	0
MFC #2	0%	Generation time	00:00
MFC #3	0%	Other Name	Value
MFC #4	0%	Purge time	00:00
MFC setting unit	SCCM	Vent time	00:00
Gas time	00:00	Last step	No
Pressure Name	Value		
Base pressure	0.000		
Process pressure	0.000		



7) System geometry

- a. Main System Enclosure : 580 x 580 x 340 (W x D x H / mm)
- b. Vacuum Pump : 170 x 454 x 253 (W x D x H / mm)
- *. Size can be changed without pre-notice



3. Installation Preparation

1) Environment

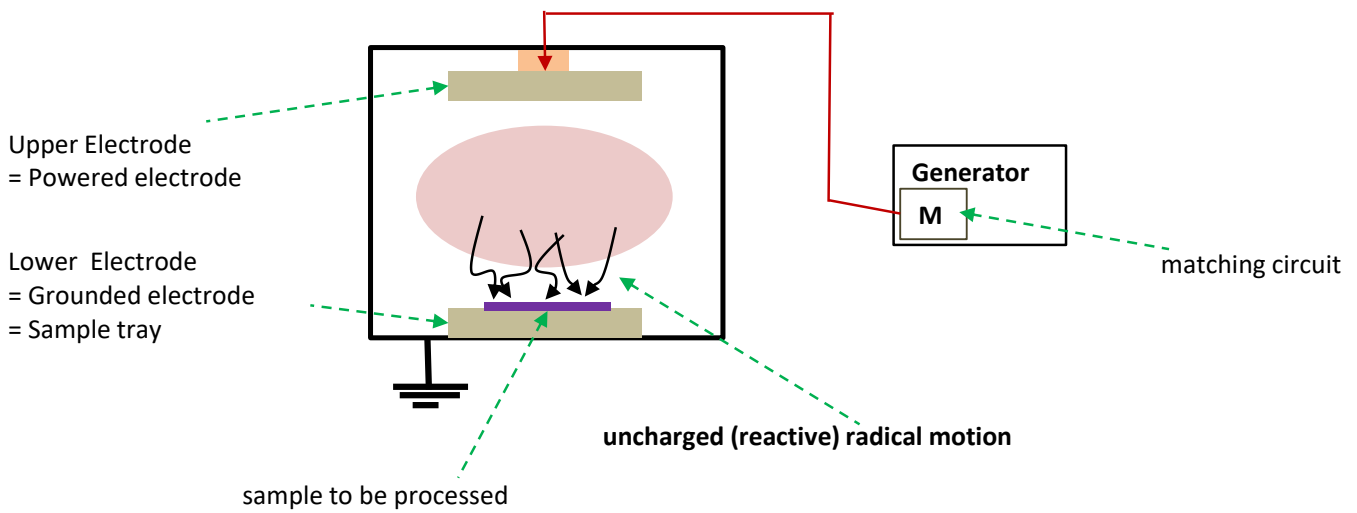
- a. Room temperature (Operation) : 15°C ~ 26°C
- b. Relative humidity : Max. 45%

2) Utility requirements

- a. Electricity : 220 VAC, 1-Ph, 50Hz, Max. 16A
- b. Process gas supply : Max. 30 psig, 1/4", Swagelok interface
- c. Purge & Vent : Max. 20 psig, 1/4", Swagelok interface
- d. Exhaust : I.D. 25mm

4. (Reactive) Neutral Domination

Sample is loaded on 'grounded electrode'



Upper Electrode = Powered electrode



5. Packing Information

- 1) Box : 1 x Box, Non-wooden
- 2) Volume : 950 x 950 x 620 (W x D x H, mm) including pallet
- 3) Sensors (On request) : 2 x Impact sensors, 2 x leaning sensors
- 4) Net & Gross Weight : 85kg, 100kg
- 5) Leaning & Impact labels can be attached on request



