KKE

Capacitive Coupled Plasma etching system that can realize highly accurate and highly reliable oxide

Capacitive Coupled Plasma(CCP) etching system

<CCP−T60M/B2M>

※ Appearance and specifications of system will be changed for improve performance

- Radicals can be selectively generated from process gas
- 60MHz power that can obtain low electron temperature and high density plasma can be applied to the upper electrode

→2MHz can be applied to the lower electrode to control ion energy with high accuracy (Optional)

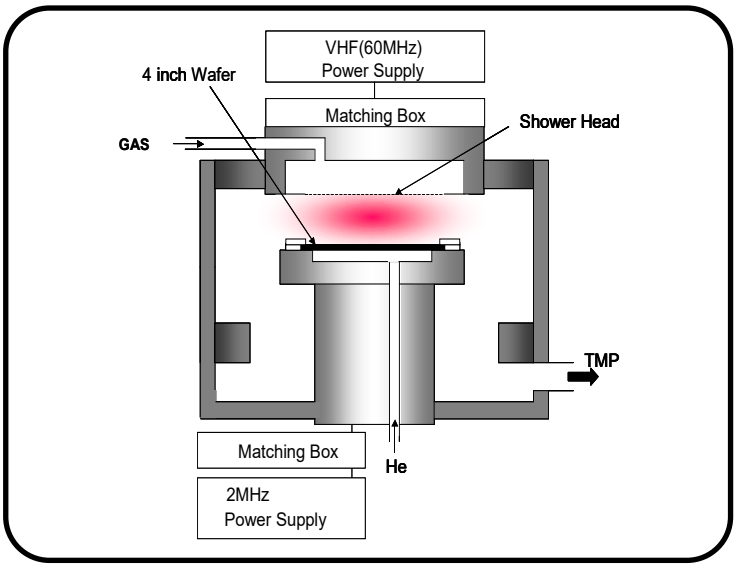
- Built-in sequence program that maintains optimum etching process conditions at all times

→CFC-based film on electrodes and chamber walls are removed by cleaning (O_2) for each etching process.

What is Capacitive Coupled Plasma etching system?

Low-k etching using SiO_2 contact holes, SiOCH, and organic materials in very large scale integration circuits (ULSI) is performed with high-precision nano-dimensions by plasma etching technology that introduces freon gas into a parallel plate plasma mechanism. Various methods of plasma etching equipment are used all over the world. However, parallel plate etching equipment has become the world standard for silicon-based oxide film etching using such Freon-based gas.

Schematic diagram of parallel plate type etching system



Standard specifications

External dimensions (excluding control system and gas system)
・・・Width＝2000mm × Depth＝ 2000mm × Height＝2000mm

1) CCP etching chamber		
Process chamber	Material	SUS304
	Dimension	φ300×H300mm
	Wall heater	RT～100℃
	Substrate size	φ4 inch
	Ultimate vacuum pressure	10^{-2}Pa range
Substrate stage	cooling method	Cooling water circulation and He gas
	Range of cooling	-20～60℃
	Sub.chacking mechanism	Electrostatic chuck
	RF bias applied power supply	2MHz 500W
Upper electrode	RF power supply	60MHz 1000W
	Electrode	Shower head with cooling mechanism
	Range of cooling	20～60℃
Vacuum exhaust system	Vacuum pump	TMP800ℓ/s、DP
	Vacuum gauge	Ion gauge
	Pressure control	Capacitance manometer
	Accessories	Gate valve, Angle valve, piping
Control system	Interlock	Equipped
	Control panel	PLC control, Touch panel

2) Load lock chamber		
Load lock chamber	Material	SUS304
	Substrate size	φ4 inch
	Substrate transport system	Automatic transport
Vacuum exhaust system	Vacuum pump	TMP500ℓ/s、RP
	Vacuum gauge	Ion gauge
	Accessories	Gate valve, Angle valve, piping
3) Gas supply system		
Gas supply	Process Gas	5 lines
	N2 purge	1 line
	Accessories	Valve, piping
4) Chiller unit		
Lower cooling	Cooling capacity	1000W
	Temperature control	-20～200℃
Upper cooling	Cooling capacity	500W
	Temperature control	20～60℃
*Optinal		
● Emission spectroscope		
● Feedback control interface		

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