



## Perkin-Elmer 4400 Series

### Introduction

With an installed base of more than thousands of systems, Perkin-Elmer was a leading supplier of sputter deposition equipment for high technology application in 1990's. The Perkin-Elmer 4400 Series, fully refurbished and upgraded by Allwin21 Corp., were designed for flexibility offering a wide range of operating and process modes. The highest quality construction, components and Allwin21's new AW-4450 System Control assure reliable operation and an ultra clean vacuum environment to yield consistently reproducible results. Every fully refurbished and upgraded Perkin Elmer sputtering system was supported by years of technological experience and backed by a worldwide sales and service organization dedicated to prompt courteous service

### Perkin-Elmer 4400 Series Key Features

- ⊕ Production-proven sputter technology
- ⊕ New optimum AW-4450 System Control
- ⊕ DC 24V for Motors, Actuator, Relay, Solenoid
- ⊕ Efficient 8" Delta cathodes, 2 to 6" option
- ⊕ Full Pallet rotation control with "indexing"
- ⊕ High Uniformity and Yield
- ⊕ DC, RF Sputter, Pulse DC option
- ⊕ Magnetron and Diode Sputter option
- ⊕ RF Etch and Bias are optional
- ⊕ Ultra Clean vacuum system
- ⊕ Load lock operation
- ⊕ UHV design
- ⊕ Flexible for development or production use
- ⊕ Full range of substrate sizes and shapes
- ⊕ Various pumping and power options
- ⊕ Co-sputtering option
- ⊕ Reactive Sputtering option

### Approved Sputter Materials

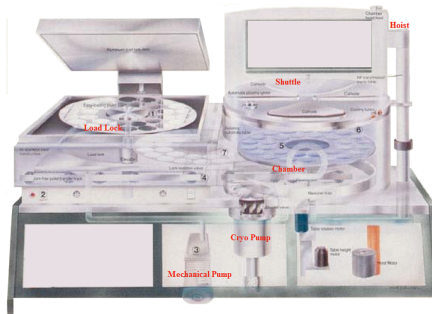
Al+W	Cr/SiO <sub>2</sub>	SiC	Ti+Au
InSnO	SiO <sub>2</sub>	Ti/W	Ti+Au+Ni
Al <sub>2</sub> O <sub>3</sub>	Mo	SiO <sub>2</sub> +O <sub>2</sub>	Ni/Fe+Cu+SiO <sub>2</sub>
Ag	MoSi <sub>2</sub>	Si+N <sub>2</sub> (Si <sub>3</sub> N <sub>4</sub> )	Ti/W+Au
Au	Mo <sub>2</sub> Si <sub>5</sub>	Si+N <sub>2</sub> +B <sub>4</sub> C	Ti/W+Au+Ta
C	Mo <sub>5</sub> Si <sub>3</sub>	Ta	Ti/W+Al/Si
Cr	Ni	TaC	Ti/W+Ni/Cr+Au
Cr/Co	Ni/Cr	Ta+Au	Ti/W+Pt
Cr/Au	Ni+Ni/Cr	TaSi <sub>2</sub>	Al+Ti/W+Ag
Cr+Cu	Ni/Fe	Ta+SiO <sub>2</sub>	W+Al <sub>2</sub> O <sub>3</sub>
Cr/Si	Pt	Zr	Zn
Cr/SiO	TiO <sub>2</sub>	TiO <sub>2</sub> +Cr	ZnO <sub>2</sub>

### Perkin-Elmer 4400 Series Software Key Features

- Maintenance, Manual, Semi Automatic, and Fully Automatic modes
- Automated calibration of all subsystems
- Troubleshooting to subassembly levels
- Programmed comprehensive calibration and diagnostic functions
- Recipe creation for full automatic wafer processing
- Automatic decline of improper recipes and process data
- Multi level pass word protections
- Storage of multiple recipes and system functions
- Real-Time process data acquisition, display, analysis
- Real-Time graphics use display
- Process Data and Recipe storage on a hard drive
- Easy TC vacuum gauge calibration
- Positioning Deposition (optional)
- GEM/SECS II functions (optional)

### Replaced Obsolete Controls

- ✘ Auto Pump Down Controller
- ✘ Load Lock Controller
- ✘ Digital Clock Timer
- ✘ Table Raise / Lower Control
- ✘ Throttle Valve Control System
- ✘ Pressure Control System
- ✘ Sputter Head Controls



Production-Proven Chamber/Load lock/Vacuum

### Perkin-Elmer 4400 Series Options

- ◆ GEM/SECS II function (Software)
- ◆ More gas lines with MFC
  - ① N<sub>2</sub>; ② O<sub>2</sub>; ③ Customized
- ◆ Lamp tower alarm with buzzer
- ◆ Mechanical pump or dry pump for process chamber and load lock
- ◆ Independent mechanical pump or dry pump for process chamber.
- ◆ Chiller for Cooling plates and table
- ◆ Turbo pump for load lock
- ◆ Load lock Lamp Heating function, Up to 200°C
- ◆ Chamber Lamp Heating function, Up to 300°C (Use one cathode port in SST chamber top plate).
- ◆ Plasma etch function (before sputter)
- ◆ Bias function
- ◆ Co-sputter function
- ◆ Reactive sputter function
- ◆ Transformer for AC 380V to 208V for DC Power Supply (if necessary).

### Perkin-Elmer 4400 Series Basic Configuration

Perkin-Elmer	4400	4410	4450
Cathode Shape	Circle	Delta	
Cathode Size	8 inch	Delta	
Cathode Quantity	1 to 4	1 to 3	

Perkin-Elmer	4400	4410	4450
DC Power	5 KW	① 5 KW; ② 10 KW	
RF Power	① 1KW; ② 2KW	① 2 KW; ② 3 KW	
Pulse DC Power	5 KW	① 5 KW; ② 10 KW	

- Main Frame
- 28" dia. SST chamber top plate with ports and Cathodes
- Sputter Power Supply
- Process Chamber
  - 8" diameter X 12" high stainless steel cylinder with 6"
  - CF flange viewport and load lock port
  - 28" diameter stainless steel base plate
  - 1 1/2" air-operated roughing isolation valve
  - Air-operated gas inlet valve
  - Air-operated vent valve
  - 1 1/2" blanked-off leak check port
  - Removable deposition shields
  - 23" diameter, 3-position water-cooled annular substrate table with variable-speed motorized table drive
  - Full circle shutter and vane shutter
  - Chain drive pallet carrier transport
  - Heavy duty electric hoist
- Load lock
  - 30" x 28" x 8" stainless steel load lock chamber with aluminum cover
  - Chain drive pallet carrier transport
  - 2" air-operated roughing isolation valve
  - Air-operated vent valve
  - 23" diameter molybdenum annular substrate pallet
  - Elevator for pallet up and down function.
- Vacuum Systems for process Chamber
  - 2 stage Cryo pump with 1000 l/s pumping speed for air, including chevron, water-cooled compressor and lines, automatic regeneration controller and plumbing kit. 7 1/2" O.D. (6" ASA) aluminum air-operated gate valve Air-operated venetian blind throttling valve.
  - 36.7 cfm mechanical pump or dry pump for process chamber and load lock (Optional)
- 1 gas line with MFC
  - ① Ar, 200 SCCM; ② Customized
- New Controller: Allwin21 Corp.'s AW-4450 System PC Control
- New Power Distribution Box: AC380V /208V/ 3Phase