Single Wafer Thin Film Processing Systems

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Plasma Enhanced Atomic Layer Deposition Systems

The NLD-4000 is a stand alone PC controlled ALD system which is fully automated and safety-interlocked having capabilities to deposit oxides and nitrides (e.g. AlN, GaN, TaN, TiN, Al₂O₃, AlN, TiN, ZrO₂, LaO₂, HfO₂) for Semiconductor, Photovoltaic and MEMS applications. It has a 13” aluminum chamber with heated walls and a pneumatically lifted top for easy access. The system features an onboard glovebox which can accommodate an array of up to seven heated or cooled 50cc cylinders for precursors and reactants incorporating fast-pulse delivery valves for pulsed gas input. Unreacted precursors can be captured with a heated filter on the chamber exhaust port. Recipes, temperature setpoints, gas flows, pump-down and vent cycles, and the flushing of delivery lines are all controlled automatically via LabVIEW software. Options include automatic load/unload (without changing system footprint), Planar ICP source with remote plasma for Plasma Enhanced ALD (Planar ICP geometry maintains a small reaction chamber volume for faster cycle times), and turbomolecular pump for lower base pressures.

FEATURES
- Less than 1Å uniformity
- 13” anodized aluminum chamber
- Minimal volume for fast cycle time and throughput
- Up to 8” substrate
- Heated chamber walls
- 400°C substrate heater
- Onboard precursor glovebox
- Up to seven 50cc precursor cylinders
- 300 l/sec maglev turbomolecular pumping package
- 5x10⁻⁷ torr base pressure
- Fast pulse gas delivery valves
- Large area filter to capture unreacted precursors
- High aspect ratio structure coating
- Fully automated PC based, recipe driven
- LabVIEW user interface
- Computer controlled safety interlocks
- 26”x44” footprint compatible with Class 100 cleanrooms

OPTIONS
- Downstream planar inductively coupled remote plasma source for PE-ALD process
- Auto load/unload
- Additional precursors

APPLICATIONS
- High-k dielectrics
- Hydrophobic coating
- Passivation layer
- High aspect ratio diffusion barriers for Cu interconnects
- Conformal coatings for micro fluidics applications
- Fuel cells, e.g. single metal coating for catalyst layers
NANO-MASTER has developed the world’s first table top Plasma Assisted Metal Organic Chemical Vapor Deposition (PA-MOCVD) system for GaN, InGaN and AlGaN deposition processes. In this unique system, having a plasma source N₂ is used instead of NH₃ for growing nitrides thus eliminating abatement of NH₃ and lowering H₂ content in the films. Plasma enhancement via RF showerhead plasma source also allows lower deposition temperatures (600°C versus 1100°C) making it possible to offer this process in a table top system.

Higher throughput for manufacturing can be achieved through clustering.

**FEATURES**
- Table top system
- 10” SS chamber
- RF plasma source with showerhead gas distribution
- Auto tuner
- 4” Substrate holder, heated up to 900°C
- Five bubblers with individual cooling/heating baths
- Heated gas lines
- Additional MFCs
- 250 l/s turbomolecular pumping package
- 5x10⁻⁷ torr base pressure
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks

**OPTIONS**
- Stand alone system
- ICP or microwave plasma source
- 14” SS electropolished cubical chamber
- 8” or 12” substrate holder
- Additional bubblers and MFCs
- Auto load/unload
- Cluster configuration compatibility

**APPLICATIONS**
- III-V Semiconductor layers
- Blue LEDs
- Laser Diodes
- InN Nanorods in UV-Vis-IR optoelectronics
- MoS₂, BN and Graphene in 3D and 2D materials
Thermal Evaporation Systems

NANO-MASTER Thermal Evaporation systems are built for a wide range of applications in organic and metal evaporation. They have a 2kVA system utilizing SCR circuitry for accurate temperature control which is crucial when evaporating organic materials. The thermal evaporators are designed with extreme care to achieve clean, uniform, and reproducible processes on a small footprint. They provide low cost, high quality capabilities for demanding applications in R&D and low scale manufacturing.

The NTE-4000 is a stand alone version of the NTE-3000 thermal evaporator system allowing more room for additional options such as various chamber sizes, substrate cleaning and cooling, co-evaporation, and sputtering capabilities.

FEATURES
- 12” Bell Jar / Cylindrical 10” SS / Cubical 14” SS chamber
- Up to 7”x7” plates and 200mm wafers
- Two evaporation boats or crucibles
- Water cooled feedthroughs
- Solid state switching for sequential evaporation
- SCR circuitry for accurate current control
- Individual source and substrate shutters
- Cross contamination shields
- Quartz crystal thickness sensor
- Twist lock mechanism for easy substrate load/unload
- Substrate rotation
- Closed loop evaporation control
- Fully automated PC based, recipe driven, LabVIEW user interface
- EMO protection and safety interlocks

OPTIONS
- Substrate heating up to 800°C or chilled wafer cooling
- Glancing Angle Deposition (GLAD) with rotation
- Planetary substrate holder
- Additional power module for co-evaporation
- Additional evaporation sources up to six
- RF/DC substrate bias
- Ion source for substrate cleaning
- Magnetron source for sputtering
- MFCs for reactive sputtering/evaporation
- Automatic load/unload
- Various pumping options including cryo pumping stations

APPLICATIONS
- Metallization in IC interconnects
- Metal contact layer in CIGS applications
- Organics field effect transistors
- Perovskite solar cells applications
- OLED
The Electron Beam Evaporation system is available in two different configurations: A compact vertical dual chamber configuration features a 14” cube main chamber where the platen is located, and underneath the main chamber a secondary chamber is provided for housing the e-beam source. This configuration can be provided with a gate valve between the two chambers to be used as a load lock to keep the e-beam source and the evaporation pockets in vacuum while substrates are loaded and unloaded from the main chamber. For applications where automatic loading and unloading of wafers are needed a third chamber is attached to the left face of the cube for another load lock. In this case, the main chamber can be kept at low 10^-7 torr range at all times and evaporation can start just a few minutes after loading the wafer. The second configuration features a single large chamber design that allows e-beam evaporation guns, magnetrons, and thermal evaporation mounted onto the baseplate. In this configuration coating of multiple wafers are possible using planetary substrate holder.

NANO-MASTER offers combinatorial evaporation system using substrate masking and computer controlled evaporation rates for individual e-beam evaporators.

**FEATURES**
- Electropolished 14” cubical or 21”x21”x22” 304L SS chamber
- 5x10^-7 torr base pressure attained with turbomolecular pumping package
- 4x 15cc pocket E-gun
- Source and substrate shutters
- 6 and 10 kW switching power supply
- Automatic pocket indexing
- Programmable sweep controller
- 26”x44” footprint with SS panels for Class 100 cleanrooms
- Quartz crystal thickness sensor
- Substrate rotation
- LabVIEW user interface
- EMO protection and safety interlocks

**OPTIONS**
- Substrate heating up to 800°C or cooling
- Glancing Angle Deposition (GLAD) with rotation
- Planetary substrate holder
- Substrate RF/DC bias
- Dual e-beam source for co-evaporation
- Ion source for substrate cleaning and ion assisted evaporation
- Additional PVD sources (thermal, sputtering)
- MFCs for reactive evaporation
- Automatic load/unload

**APPLICATIONS**
- Lift off
- Optical coatings
- Thin film transistors
- Active CIGS layer
- Josephson junctions
PECVD Systems

NANO-MASTER’s PECVD systems are capable of depositing high quality SiO₂, Si₃N₄, CNT, DLC and SiC films. Depending on application RF showerhead, Hollow Cathode, ICP or Microwave plasma sources can be used. The platen can accommodate up to 8” wafers and can be biased with RF, Pulsed DC or DC while being heated up to 800°C resistively or with IR lamps. The chamber is evacuated to 5x10⁻⁷ torr pressure range using 250 l/sec turbomolecular pump backed with 5 cfm mechanical pump. The system utilizes LabVIEW PC control for full automation.

FEATURES
- 13” Al chamber or 14” SS cube chamber
- 5x10⁻⁷ torr base pressure attained with turbo pumping package
- Plasma sources: RF showerhead, ICP, hollow cathode and microwave
- Gas ring for precursors and dopants
- Platen: 200°C - 800°C, rotating, biasable with RF, low frequency RF, DC, and pulsed DC
- MFCs with electropolished gas lines and pneumatic shut-off valves
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks

OPTIONS
- ICP source for high density plasma
- Substrate Pulsed DC bias
- Substrate LF bias for film stress control
- Rotating platen for coating 3D parts
- Auto load/unload
- Dry pump
- Bubblers for organo-metallics with heated gas lines
- Gas box for toxics gases with toxic gas monitors
- End point detection
- Various dopants (PH₃, B₂H₆)

APPLICATIONS
- Encapsulation, isolation
- Photonics structures
- DLC’s coating
- CNT’s - memory devices
- Surface passivation layer - Solar cells
- Graphene - Nano scale electronics
Sputtering Systems

NANO-MASTER's state of the art Sputtering Systems can be constructed with various chambers and source configurations for deposit of metals and dielectric thin films on to substrates up to 200 mm. The systems can be equipped with DC, RF and Pulsed DC power supplies to enable sequential or co-sputtering. The systems come with a turbomolecular pumping package to achieve a base pressure of $5 \times 10^{-7}$ torr. Magnetron to substrate distance is adjustable in order to achieve desired uniformity and deposition rate. Rotating platen with off axis magnetrons provide means of achieving the best film uniformity. Crystal thickness monitor is provided for terminating process automatically. Platen can be heated up to 800°C and RF biased.

**FEATURES**
- Electropolished 14” cubical chamber optimized for sputtering
- $5 \times 10^{-7}$ torr base pressure attained with turbomolecular pumping package
- Single or multi magnetron configuration with varying target sizes
- Sequential sputtering/co-sputtering
- Adjustable magnetron to substrate distance
- 1” to 6” diameter planar magnetron
- Source and substrate shutters
- Mass flow controller with electropolished gas lines
- 4” viewport with manual shutter
- Quartz crystal thickness sensor
- Substrate rotation
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks

**OPTIONS**
- Substrate heating up to 800°C or cooling
- Glancing Angle Deposition (GLAD) with rotation
- Custom chamber sizes
- 1.5-5kW Pulsed DC power supply for ITO/ZnO like materials
- Tilted magnetrons
- RF biased substrate
- Ion source for substrate cleaning
- Ion assisted sputtering
- Additional RF and DC power supplies for co-sputtering
- Thermal and E-beam sources
- Additional MFCs for reactive sputtering
- Automatic load/unload
- Various pumping options including cryo pumping stations

**APPLICATIONS**
- Optical coatings, and ITO coatings
- Hard coatings
- Protective coatings
- Microelectronics patterning
- TCO in OLED applications
NANO-MASTER NOC-4000 Optical Coating System provides state of the art atomic level cleaning and etching of optical samples in one chamber and automated sample transfer to a second chamber for optical coating without breaking vacuum. The system can also use the chambers independently, each with its own automatic sample loading and unloading.
NANO-MASTER’s NRE-4000 is a stand alone Reactive Ion Etching (RIE) system with showerhead gas distribution and water cooled RF platen. It has a stainless steel cabinet and a 13” cylindrical aluminum chamber that opens from top for wafer loading or chamber cleaning. It can accept up to 8” (200 mm) wafers. The chamber has two ports, one with a 2” window the other with a blank off for diagnostic equipment such end point detection. The chamber is extremely clean in design and reaches a base pressure in the 5x10⁻⁷ torr range or lower depending on the pumping package. It can be operated in the pressure range of 20 mTorr to 8 torr. The standard pumping package has a 250 l/sec corrosive turbomolecular pump, sieve filter, and a 10cfm PFPE prepared backing pump. The RF power is provided by a 600W 13.5 MHz power supply, and an auto tuner. The substrate DC bias is continuously monitored and reaches as high as -500 V, which is important for anisotropic etching. The system is PC controlled recipe driven giving maximum flexibility to user while maintaining high reproducibility. Single wafer and cassette to cassette auto load/unload are available.
NANO-MASTER’s Ion Beam Milling systems are very adaptable and can be built in various configurations depending on the application. A variety of sample holder and ion source configurations allow for a diverse range of applications. Sample holders used in the Ion Beam Milling systems have ±90° tilt, rotation, water cooling, and helium backside cooling. NANO-MASTER technology has demonstrated capability of keeping substrate temperatures below 50°C. By tilting and rotating trenches are beveled, and control over sidewall profile as well as radial uniformity is improved. Various options are available for different grid configurations and neutralizers. A sputtering option can be provided for coating freshly etched metal surfaces. Single wafer auto load and unload is also available.

**FEATURES**
- Electropolished 14” SS cubical chamber
- Water cooled ±90° automatically tiltable rotating substrate holder
- Mass flow controllers
- DC ion sources 1cm-16cm
- ±1.2% etch uniformity across 6” Au substrate
- Capable of cooling substrates to <50°C
- 26”x24” footprint with SS panels for Class 100 cleanrooms
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks

**OPTIONS**
- Spectroscopic end point detection
- Helium backside cooling
- Electropolished 21” SS cubical chamber
- Auto load/unload
- 1200 l/sec turbomolecular pump
- Cryogenic pumping package
- Additional MFCs for reactive gases
- Gridded RFICP sources
- Hollow cathode or filament neutralization
- Sputtering source for passivation layer deposition

**APPLICATIONS**
- Argon milling for planarization
- III-V photonics components
- Laser gratings
- High aspect ratio etching of photonics crystals
- Deep trenches on SiO₂, Si and metals
NANO-MASTER Plasma Cleaning and Ashing systems are designed to meet a wide range of needs from wafer resist stripping to surface modification of batch as single wafer loads. They are PC controlled systems with various plasma sources, heated and unheated substrate holders and unique ability to switch from plasma etch to RIE etch modes.

**FEATURES**
- Stainless Steel, Aluminum or Bell Jar chambers
- Class 100 cleanroom compatible
- Showerhead, ICP or microwave plasma sources
- Rotating platen
- 250 l/sec turbomolecular pump
- 5x10⁻⁷ torr base pressure
- RF biasable heated up to 300°C PID controlled or cooled platen
- Fully automated or manual RF tuning
- Up to four mass flow controllers with electropolished gas lines
- PC controlled pneumatic valves
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks

**APPLICATIONS**
- Delayering for failure analysis
- Removal of organic and inorganic materials without residues
- Photoresist stripping and ashing
- Desmearing and etch back
- Cleaning microelectronics, drilled holes on circuit boards or Cu lead frames
- Descum prior to lift off metallization process
- Adhesion promotion, elimination of bonding issues
- Surface modification of plastics: O₂ treatment for paintability
- Producing hydrophilic or hydrophobic surfaces
Dual Systems

Any combination of two systems; ALD, Sputtering, Evaporation, Ion Beam Milling or Etching, RIE, PECVD found in the NM catalog can be configured as dual system. Cost is cut by sharing pumping systems and power supplies when applicable. The chambers are isolated from each other via gate valves and can be pumped and vented individually. Load lock or in vacuum chamber-to-chamber transfer is available.

FEATURES
- 26”x44” footprint with enclosed panels
- Fully automated PC based, recipe driven
- LabVIEW user interface
- EMO protection and safety interlocks
Single Wafer Cleaning Systems

NANO-MASTERS’s Single Wafer Cleaners (SWC) focus on providing the best possible cleaning capability while maintaining affordability. A standard system is configured with megasonic clean, chemical clean, brush clean, high RPM spin dry with IR heating and N₂ flow. Patented megasonic nozzle movement assures uniform delivery of megasonic energy; therefore, at any point on the surface, energy delivered can be kept below damage threshold.

APPLICATIONS
- Patterned and un-patterned masks and wafers
- Ge, GaAs and InP wafer cleaning
- Post CMP wafer cleaning
- Cleaning of diced chips on wafer frame
- Cleaning after plasma etch or photoresist stripping
- Mask blanks or contact mask cleaning
- Cleaning of x-ray and EUV masks
- Optical lens cleaning
- Cleaning of ITO coated display panels
- Megasonic assisted lift-off process

FEATURES
- 12” OD, 7” x 7” substrates
- Stand alone and table top
- Venturi powered vacuum
- Damage free megasonic
- Independent chemical dispenses
- Spin dry and heated N₂
- Microprocessor controlled
- Chemical dispense unit
- Dual drain for acids and solvents
- Suck back valves to prevent drips
- Safety interlocks

OPTIONS
- PVA brush cleaning (100 RPM)
- Post CMP brush (up to 400 RPM)
- Nitrogen ionizer
- Bottom side DIW and dry
- CO₂ inject with DIW resistivity monitor
- In-line heaters for DIW or chemical
- Fill sensors for chemical
- FM 4910 materials
Large Substrate Cleaning System

NANO-MASTER's Large Substrate Cleaner (LSC) is a stand alone cleaner which utilizes PC control for substrates up to 21” OD. A LabVIEW interface through a touch screen provides greater control compared to the SWC systems and allows for controlled access levels such as operators, process engineers, and maintenance. The LSC incorporates the same patented megasonic technology and chemical dispenses as the SWC systems. The combination of LabVIEW control and the larger process chamber support additional options such as ozonated DIW, high pressure DIW, pelliclized reticle, and piranha cleaning. Single wafer and cassette to cassette auto load/unload are available.

FEATURES
- 21” OD, 15”x15” substrates and 450mm wafer
- Damage free megasonic cleaning
- Variable speed PVA brush
- Chemical dispenses with suck back valves
- Spin dry with heated N₂
- Dual drain for acids and solvents
- Fully automated PC based, recipe driven
- Touchscreen user interface
- Manual load and unload
- Safety interlocks and alarm
- 32”x28” footprint

OPTIONS
- Pelliclized reticle cleaning
- Double sided brush and megasonic cleaning
- Chemical delivery module
- Fill sensors for chemical bottles
- Piranha cleaning
- Ozonated DI water (20 ppm of O₃)
- High pressure DI water
- Heated DI water
- Nitrogen ionizer
- CO₂ injector with DIW resistivity monitor
- FM4910 materials
- Robotic loading/unloading from SMIF pod

APPLICATIONS
- Si and Saphire wafers
- Post CMP wafers
- Chips on wafer frame
- Display panels
- ITO coated displays
- Patterned and un-patterned masks
- Mask blanks, contact masks
- Backside cleaning of pelliclized reticles
- Cleaning of pellicle frame adhesive
Pelliclized and Unpelliclized Reticle Cleaning Systems

FEATURES
• Two Dual Dispense Arms:
  - Linear Arm Provides Uniform Cleaning of Front Side Alignment Marks for Pelliclized Reticles
  - Radial Arm Provides Uniform Dispense of DIW with Megasonic Energy for Back Side Cleaning
• Pelliclized Reticle Clean: Reticle is mounted face down on the chuck and the back side is cleaned with the radial arm. Reticle is then dried, picked up and flipped. The pellicle protection cup is then mounted onto the front side and the alignment marks are then cleaned with the megasonic nozzle, brush and chemical dispense from the linear drive arm. Chuck is then rotated 180° and other side is cleaned. The reticle is then dried and the protection cup removed. All of the manipulation is automatically done by the robot.

CAPABILITIES
• Megasonic clean
• Chemical dispense
• SC1 clean
• Brush clean with megasonic DI water dispense
• Brush self clean with megasonic DI water
• Dual drain
• N₂/IR lamp dry
• Fully automated with touchscreen interface
• Robotic loading/unloading from SMIF Pod
• Automatic bar code reader
• Data/error logging
• CO₂ injector with DI water resistivity measurement
• Class 1 cleanroom compatible
• 59”x45” footprint

OPTIONS
• Ozonated DI water clean*
• Bulkfill for auto mixing SC1
• SC2 clean
• Piranha clean*
• High pressure DI water*
• Heated DI water
• Heated chemicals*
• Up to 9”x9” reticle clean
• 21”OD, 15”x15” large substrate clean

* For Unpelliclized Reticles Only
NDT-4000 is a Device Testing System for testing devices or samples in extreme vacuum and controllable uniform heat and cold cycle conditions. It is equipped with computer control, safety interlocks, and multiple levels of access with password restrictions. It can be used to test devices/samples with automated heat and cool cycles for extended periods of time exceeding 36 hours with varying temperature conditions defined by the recipe. One of the common applications of this system would be space simulation. The approximate chamber size is 43” in length and 24” in diameter. A 16”x32” sliding thermal platform can be controlled within ±1 °C across its surface area for temperatures ranging from -100°C to 150°C. This platform is mounted on rolls so that it can be pulled out to 75% of its length for loading devices/samples. The chamber has provision for 4x 8”CF flanges that can be configured with an assortment of customer-defined feedthroughs for digital and analog communication, temperature measurement, power, RF, and other instrumentation needs. The standard vacuum system consists of a 1250 l/sec turbomolecular pump and a 680 l/min dry scroll backing pump. The base pressure of the system can be as low as 7x10⁻⁸ torr and could reach 10⁻⁶ torr range in less than 20 minutes.

**APPLICATIONS**
- Mini satellites
- Device testing in temperatures -100°C to 150°C in extreme vacuum for space simulation

**FEATURES**
- Rapid heating and cooling times
- 24”x43“ horizontal cylindrical chamber
- Chamber has a provision for 4x 8”CF flanges
- 16” x 32” thermal platform controlled within ±1°C for temperatures ranging from -100°C to 150°C
- Thermal platform is mounted on rolls so that it can be pulled out to 75% of its length for loading devices
- Closed refrigeration system to eliminate consumable cost of liquid nitrogen used in most other systems
- Various pumping package configurations
- Base pressure 7 x 10⁻⁸ Torr, 10⁻⁶ Torr range in less than 20 minutes
- Automatic pressure control
- Multiple levels of access with password restrictions
- Fully automated PC based, recipe driven
- Custom feedthroughs
About Us

NANO-MASTER, USA was founded in 1992 as a wholly-owned subsidiary of NANO-MASTER, S.A., France, a leading metrology company in defect inspection and high speed overlay measurement. Subsequent to the closing down of Nano-Master S.A. in 1993, Dr. Birol Kuyel took over the ownership of NANO-MASTER, USA. The name was changed later to NANO-MASTER, Inc., which has now become a 100% privately owned US company.

NANO-MASTER started design and development of research tools in 2001 and focused on thin film applications. The first tool was a Sputtering System followed by a PECVD System and later a Wafer Cleaner System was delivered.

NANO-MASTER products are used in LED, MEMS, Optoelectronics, Nanotechnology, Photovoltaic, Semiconductor, and Space Simulation applications. Some of the products are PECVD Systems for deposition of SiO₂, Si₃N₄, DLC and CNT; PA-MOCVD Systems for InGaN and AlGaN; Sputtering Systems (reactive, co-sputtering, combinatorial); Thermal and E-Beam Evaporators, Ion Beam Milling and Reactive Etching Systems; Atomic Layer Deposition and Atomic Layer Etching Tools; Thermal Vacuum Systems; Megasonic Cleaning Systems and Photoresist Stripping Equipment.

NANO-MASTER has established itself as a thin film equipment supplier around the world and sold over 180 units in forty countries primarily to universities, research centers and leading national laboratories.

Birol Kuyel, Ph.D. is the president and CEO of NANO-MASTER, Inc. His background expands to broad range of technologies including High Temperature Plasma Physics, Turbulence, Si₃N₄ Film Deposition and Characterization, X-Ray Source Development, DUV Source Development, DUV Step and Scan Lithography Tool Development (SEMATECH) and the Lithography Cost of Ownership Model (SEMATECH). He has been awarded 12 patents and published numerous papers.

NANO-MASTER employs highly skilled and educated design and manufacturing engineers, application engineers, service engineers and support personnel.

NANO-MASTER’s objective is to provide top quality services while maintaining the highest levels of integrity at all times.
NANO-MASTER

Single Wafer Thin Film Processing Systems

- **Deposition**
  - E-Beam, PECVD, PLD, DLC, DC & RF Sputtering, Ion Beam Sputtering, Thermal Evaporation

- **Etching**
  - RIE, DRIE, ICP, Ion Beam Milling & Etching, Plasma, Wet

- **Growth**
  - PE-ALD, PA-MOCVD, CNT, DLC, Diamond, Graphene

- **Surface Treatment**
  - Ion Beam, PIII, Plasma

- **Cleaning**
  - Dry: Ion Beam, Plasma
  - Wet: Megasonic, Brush, Piranha, O₃DIW

- **Other**
  - Space Simulation Systems, Heated Platens, Plasma Sources, Ashing, Resist Stripping (Dry & Wet)
Single Wafer Thin Film Processing Systems

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