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Technology Innovation

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ULTECH CO.,LTD.

Technology innovation with advanced technology We create the future

科技创新引领科技革命 我们创造未来



High tech solution corporate

ULTECH was formed in 1998 by a group of individuals with extensive in the semiconductor manufacturing system. ULTECH is a process equipment company that develops and manufactures a wide variety of deposition, etching, and surface treatment systems. It's the people that make the difference at ULTECH. We care about our customer and our products.

ULTECH consists of engineers who have technology and dream for the future. ULTECH endeavors all our technology and dreams to develop the high-performance thin film manufacturing equipment.

ULTECH promises that ULTECH will concentrate all his/her abilities to provide you the high-performance and low cost equipments which give you a high competitive power and priority in thin film technology.

ULTECH 有限公司创建于 1998 年,由一支在半导体制造业体系中有广泛经验的队伍组建而成。

ULTECH 是致力于发展和制造各种各样电镀, 蚀刻和表面处理系统的技术设备企业。

ULTECH 重视每位客户以及产品。ULTECH 拥有一批具有精湛技术, 丰富想象力的技术师, 努力运用所有的技术和发挥所有的才能去研发高性能薄膜(微型机电系统)加工设备。

ULTECH 承诺: 将集中所有他/她的能力为您提供高性能和低成本的设备, 给你一个较高的竞争力, 优先在薄膜技术。

History

1998

Founded ULTECH Co.

1999~
2003

Nominated for Venture Company from SMBA (SMBA : Small & Medium Business Administration)
Launched the in-situ double-side metal coating system for mass production
Appointed Leading Small & Medium Company by Daegu city
Moved to the new building in Daegu High-tech zone (Clean room of class 1,000)
Appointed INNO-BIZ Company by SMBA
Awarded New Generation Leading Technology Company from Daegu Techno Park
Exporting Sputter system for mass production to Indonesia

2004~
2008

Exporting E-beam evaporator system for mass production to China
Develop PR Spray & Spin coater for manufacture of 3D Integrated micro system
Participate in SEMICON CHINA 2006 exhibition
Exporting the LPCVD/Furnace system to India
Launched new model of E-beam evaporator system (SEE-7)
Launched new model of Asher system (EURA-200)

2009~
2013

Exporting LPCVD system to Malaysia
Launched E-beam evaporator system for LED production
Launched Diffusion furnace for Solar cell production
Exporting SPUTTER & THERMAL, E-beam evaporator system to Russia
Exporting Wet bench to India
Extended FAB-2
Launched PECVD system for Solar cell production
Launched Wet bench system for Solar cell production
Launched Turnkey Line for Silicon Solar cell production
Launched RIE system for Solar cell production
Launched Roll to Roll Sputter system for flexible thin film coating
Participate in 2013 Shenzhen International Touchscreen Exhibition

2014~
2019

Exporting RTP to China
Exporting LPCVD & Furnace to Turkey
Launched new model of RTP
Developed nano structure deposition equipment
Developed perovskite solarcell equipment
Exporting ICP RIE to Russia
Exporting LED equipment(ICP RIE, E beam evaporator, RTP) to Malaysia

■ ULTECH PRODUCTS & APPLICATION

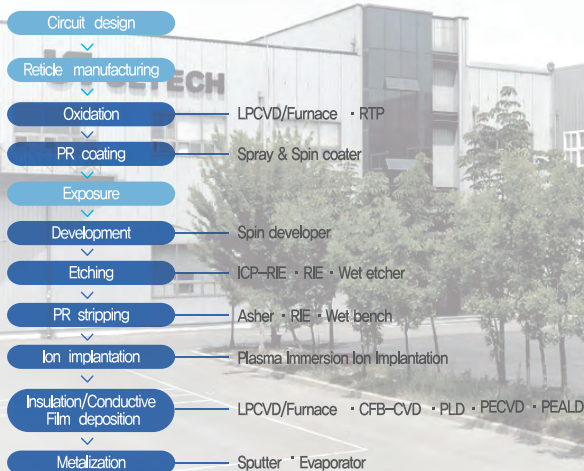


- Sputter · PLD
- Evaporator · OLED
- LPCVD/Furnace
- PEALD/ALD · PECVD/CVD
- ICP-RIE/RIE · Asher · RTP · Plasma doping system
- Spray & Spin coater · Wet bench
- Solar cell turnkey line

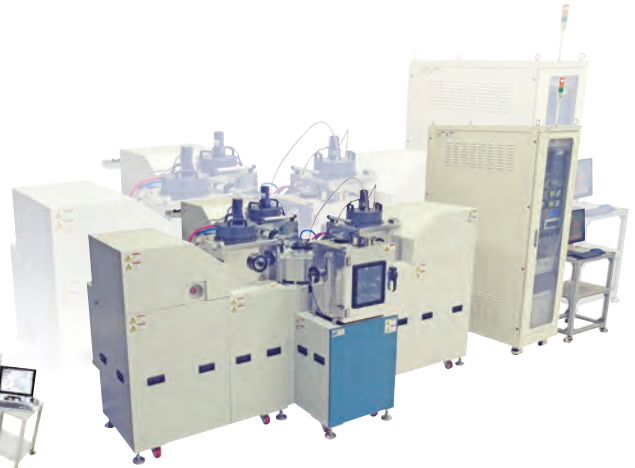
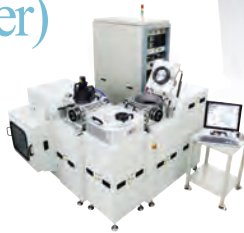


- Semiconductor
- Display (TSP)
- LED
- Bio & Medical
- New Renewable Energy & Environment
- Nano & Optics
- Electronics & Electrical
- Mechanical industrial
- Perovskite solar cell turnkey line

■ Semiconductor Production Front End Process



SPUTTER (Stand alone & Cluster)



● Features

- Excellent of film quality
- High thickness uniformity by functions of the substrate rotation and revolution, T/S distance controls
- Possible to attach up to 6 target guns
- Substrate cooling or optional heating
- High conductance vacuum pumping
- Cluster system up to 2 process modules
- Optional pre-cleaning or pre-heating treatment
- Cassette type transfer chamber
- Easy and user-friendly control system & software

● Applications

- Conventional materials coating
- Alloys and intermetallic compounds coating
- Interleaving parallel and antiparallel magnetic thin films layers coating
- Interleaving conducting, semiconducting, and insulating layers coating
- MR, GMR and spin valve devices
- Reflective and anti-reflective optical coating
- Opto-electronic films coating
- Reactive sputtering for hard coating



SPUTTER (Industrial & Roll-to-Roll)

● Applications

◆ Industrial

- Metal electrode deposition of information & communication device (Resonator, filter, oscillator, capacitor, PTC, NTC, etc.)
- Medical appliances coating (Probe for ultra-sonic diagnosis)
- Industrial machinery & tools hard coating
- Metal coating on glass
- Metal coating on polymer substrate

◆ Roll-to-Roll

- Metal or ITO film for Touch screen panel
- Metal or TCO coating for Flexible solar-cell
- Window film
- Low-e film
- AR film



E-beam Evaporator



● Features

- High deposition rates
- Enables rapid processing for lift off and/or step coverage applications
- High throughput batch process
- Crystal thickness sensor for precise thickness control
- Source tray with single or multi-pocket e-beam sources and/or one or more thermal evaporation sources
- Optional substrate heating
- High conductance vacuum pumping
- Easy and user-friendly control system & software

● Applications

- Conventional materials coating
- Mirror reflective coating
- Monolayer and multilayer filter and broadband antireflective(BBAR) coatings
- Spintronix research (UHV & very low temperature system)



Thermal Evaporator

● Applications

- Metal coating (co-evaporation)
- Organic materials coating
- Perovskite materials coating
- Monolayer or multilayer conventional materials coating
- MoO₃, WO₃, SnO₂, SiO₂,...etc oxide materials coating



OLED / OPV / Perovskite Solar Cell

● Features

◆ OLED

- Linear type system
- Multi source deposition
- Pretreatment chamber : O₂, CF₄ plasma
- Deposition chamber #1 : Organic EL deposition
- Deposition chamber #2 : Metal deposition
- Glove box
- Encapsulation : UV curing & Dispenser
- Substrate transfer module : loading/unloading used MTR (Magnetic Transfer Rod)
- Mask alignment
- Thickness control
- Optional substrate heating
- High conductance vacuum pumping



● Features

◆ OPV / Perovskite Solar Cell

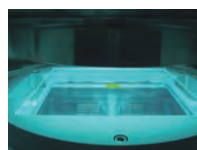
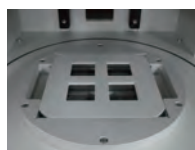
- Glove box : 2.5 person
- Substrate size : Max 200mm * 200mm
- Spin coater in the glove box
- UV curing
- Epoxy Dipensor
- Hot plate
- Simulator
- Thermal evaporator : 3 boat, Process chamber- $\leq 2 \times 10^{-7}$ Torr
- Organic effusion cell ; 3 ea



● Applications

◆ OLED / OPV / Perovskite Solar Cell

- OLED
- Organic solarcell
- Perovskite solarcell
- Nanostructure
- DSSC (Dye-sensitized solar cell)



RTP

● Features

- Available either ATM or Low pressure
- Wide operating temperature band
- Popular Low Cost Design model for R&D purpose
- High conductance vacuum pumping options
- Easy and user-friendly control system & software
- Separate circuit protects heater from exceeding rated temperature limit
- Temperature range 150~1,250°C

● Applications

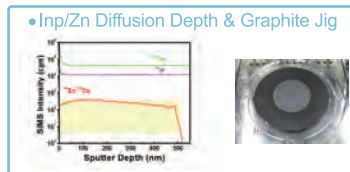
- Thin gate oxidation (nano device)
- Rapid annealing
- Silicidation (TiSi, CoSi, etc.), implant anneal (SD, well anneal), oxidation, dielectric film densification

● Advantage

- Real substrate temperature
- Accurate temperature control
- Unnecessary compensation
- High reliability
- Low cost



■ Stand Alone Type



■ Bench Top Type

Brazing FURNACE / Belt FURNACE

● Features

- The flexible weight of brazing material
- Distortion due to uniform heating and cooling is kept to a minimum.
- Parent metals are not fused or damaged.
- No surface deterioration takes place during the process.
- Long and inaccessible joints can be filled successfully.
- Complicated and delicate assemblies have been brazed which could not have been manufactured by any other route.
- Rapid reproducible results are obtainable

● Applications

- Nickel-Silver Alloy
- Cu-Ni, Ag-Ni, Ti-W-Ni
- Annealing
- Sintering
- Firing



■ Belt Furnace



PEALD/ALD



■ Traveling Type

● Features

- Wide choice of deposition sources
- Minimize reactor volume
- Wide temperature range options
- Self-distributed gas injection
- Fast switching speed
- Liquid source delivery unit
- Cluster system up to 2 process modules
- Cassette type transfer chamber
- Easy and user-friendly control system & software



■ Roll-to-Roll Type



● Applications

- High-k Gate Dielectrics
- Diffusion barriers
- High-k Dielectrics
- Passivation Layers
- Transparent Conductors



■ Shower Head Type

PECVD

● Features

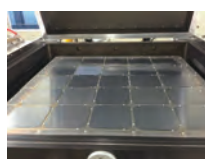
- High thickness and refractive index uniformity
- Wide temperature range options
- Heighten Homogeneity of gas distribution in the chamber supplying gas with Showerhead
- High conductance vacuum pumping for the low pressure process
- Cluster system up to 2 process modules
- Cassette type transfer chamber
- Easy and user-friendly control system & software

● Applications

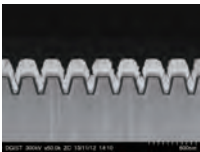
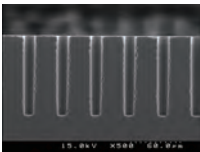
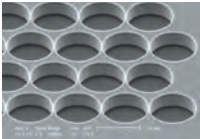
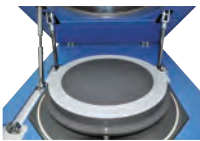
- Active optical device layers
- Interlayer dielectrics
- Gate oxide



■ RIE + PECVD



ICP-RIE / RIE

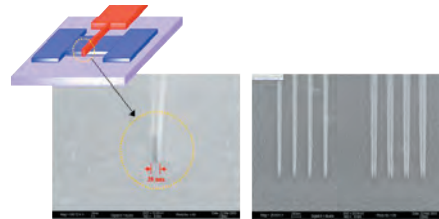


● Features

- Produces a uniform, plasma
- Provides the process window flexibility required to etch a wide variety of advanced device structures
- Showerhead gas injection
- High conductance vacuum pumping to remove reaction by-products
- Cluster system up to 2 process modules
- Cassette type transfer chamber
- Easy and user-friendly control system & software
- Optional high-density plasma (ICP source)

● Applications

- Silicon etching (MEMS & NANO)
- Dielectrics etching (SiO₂, Si₃N₄, etc.)
- Polyimide etching
- Compound semiconductors etching (GaAs, GaN, etc.)



■ Silicon 20nm slip line etching

ASHER & PLASMA CLEANER

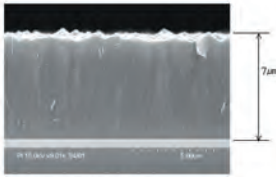


● Features

- Etching the resist film using O₂ plasma
- Downstream RF plasma module on the top of the process chamber
- Provides a compact system design with high repeatability and residue free process using RF plasma source
- The downstream RF source delivers the excellent process control and damage free to the underlying exposed film
- Optional substrate heating

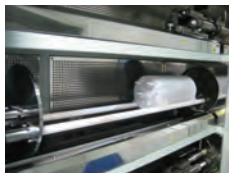


Horizontal LPCVD / FURNACE



- ▶ Dep. rate : 120 Å/min
- ▶ Dep. thickness : 7µm
- ▶ Thickness uniformity : $\leq \pm 1\%$

■ Poly silicon LPCVD



● Features

- The flexible use of 1 to 4 stacks
- Excellent temperature uniformity
- High throughput batch process
- Automatic loading and unloading of the system result in high reliability and stable process conditions
- High conductance vacuum pumping options
- Easy and user-friendly control system & software
- Separate circuit protects the furnace from exceeding rated temperature limit



Vertical LPCVD/FURNACE



● Features

- The flexible use of 1~2 stacks
- Excellent temperature uniformity
- High throughput batch process
- Automatic loading and unloading of the system result in high reliability and stable process conditions
- High conductance vacuum pumping options
- Easy and user-friendly control system & software
- Separate circuit protects the furnace from exceeding rated temperature limit

● Applications

- Low stress / Stoichiometric silicon nitride
- Poly / doped-poly silicon
- Silicon oxide
- Wet / Dry oxidation, Annealing
- LTO

Graphene CVD

Features

- High speed temperature up/down heater
- Excellent temperature uniformity
- Automatic loading and unloading system
- Easy and user-friendly control system & software
- Remote / direct Plasma

Applications

- Graphene
- CNT
- MoS2
- WS2



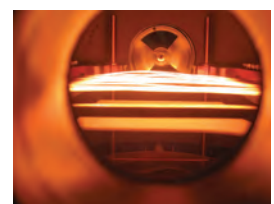
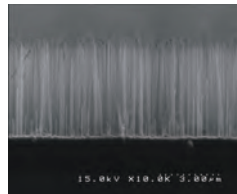
■ Bench Top Type



Hot wire/Nano wire/ SiC CVD

Applications

- Si nano wire
- SiC epitaxy
- PIN thin film solarcell
- Organic material for OLED



PLD

● Features

- Very high deposition rate
- Processing ability in the high oxygen pressure
- Multi-layer deposition (up to 6 layer)
- Excellence in substrate heating solution



● Applications

- Superconducting material and magnetic materials deposition
- Oxide materials deposition
- Single and multi-layer thin film deposition



SPRAY & SPIN COATER

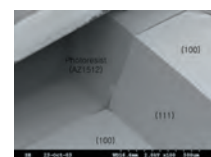
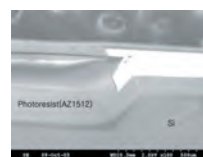
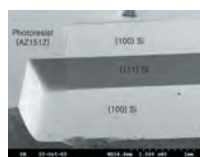


● Features

- Uniform coating of topography such as V-grooves and trenches
- Small compact footprint
- Designed for R&D and low volume manufacturing
- Excellent repeatability and process uniformity
- Easy and user-friendly control system & software

● Applications

- Photo-resist Coating
- Spin-On-Glass Coating
- Organic Coating



WET BENCH & DI GENERATOR

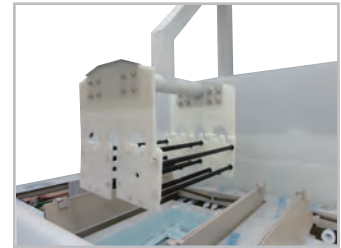


● Features

- Minimizing foot print from optimizing design in fluid tank
- Smaller usage of chemicals and pure water because of excellent design in piping
- Easy control of temperature, flux, and mixing rate of the fluid
- Easy control and maintenance
- Available mixing of Cleaning / Chemical etching / Solvent / Developer bench

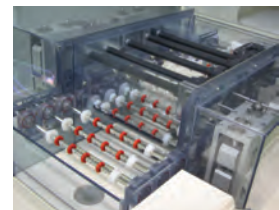
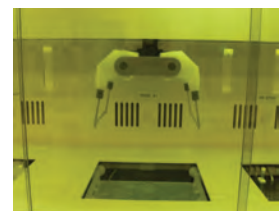
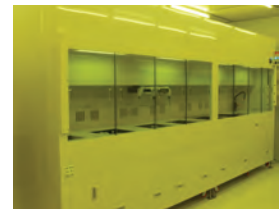
● Applications

- Photoresist(PR) stripping / developing
- Mixing of cleaning / chemical etching / solvent / developer bench
- RCA cleaning

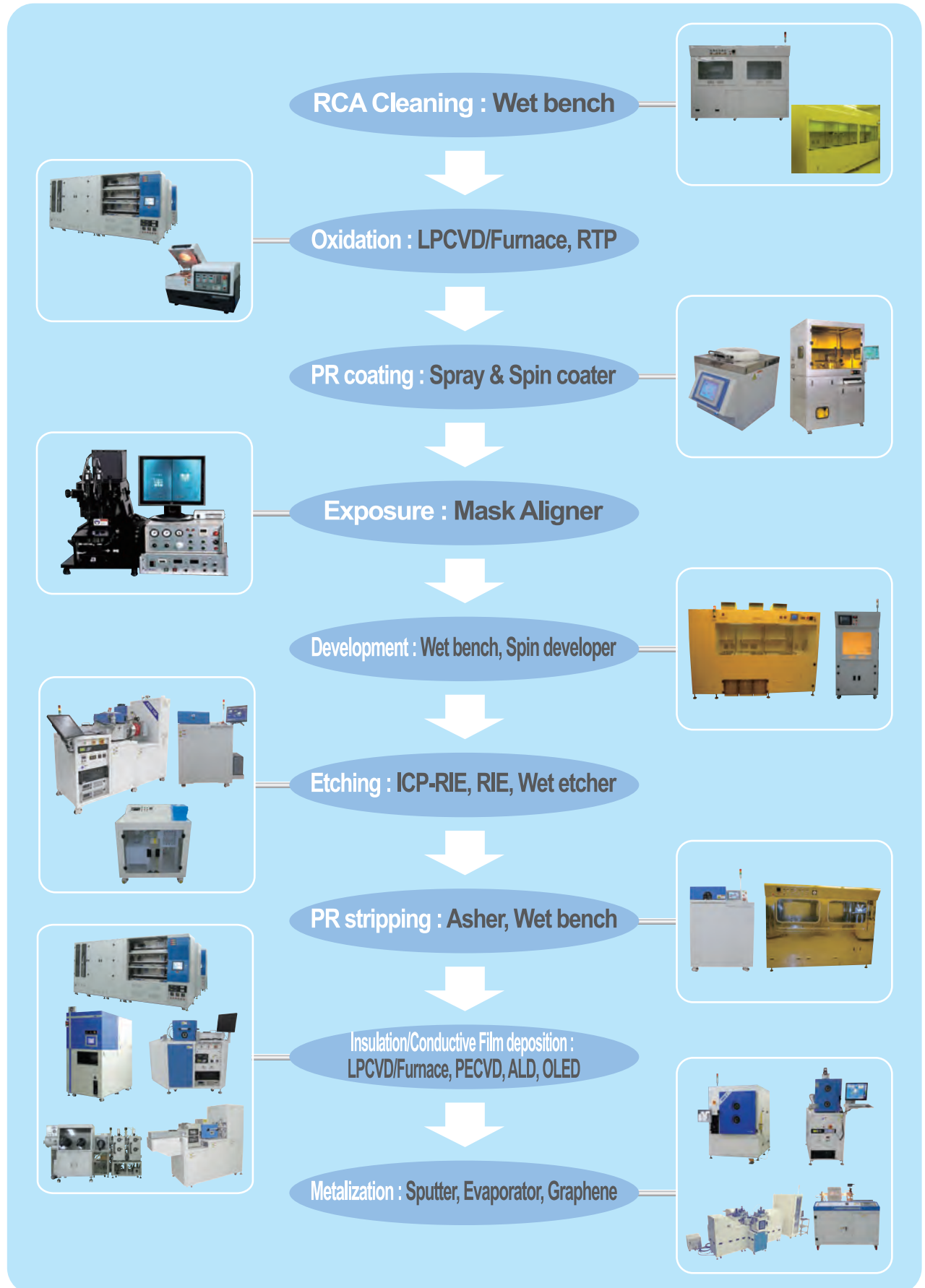


● Specifications

- Sample size & throughput : Up to 8inch, 1 cassette (25 wafers)
- Cleaning wet bench : SC-1/2, DHF, QDR, KOH, H3PO4
- Etching wet bench : DHF, Metal Etch, QDR
- Solvent wet bench : Solvent, QDR
- Developer wet bench : Developer, QDR
- Spin dry bench (option)
- Process control : Manual process control (option – PLC)



DISPLAY / MEMS NANO Process



Solar Cell Turnkey Line

