

● ALD & CVD 장비 개발 전문기업

- ALD/CVD 장비/공정 개발
- 저렴한 가격의 R&D용 ALD 개발 (Lucida 100 series)
- Process recipe 제공
- 다양한 application 제공
- CVD & ALD 공정 전문가의 장비 개발

● ALD film 증착 서비스

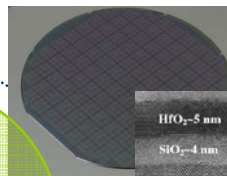
자사에서 보유하고 있는 Lucida D200 ALD 장비를 OPEN 하여 학교, 연구소의 학생 또는 연구원에게 film 증착 서비스를 제공.

● ALD 공정 Consulting

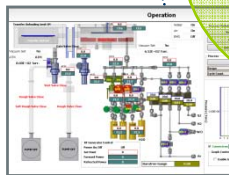
학교, 연구소의 신규 물질 ALD 공정 개발에 필요한 precursor 선정 및 초기 공정 recipe 확보를 위한 공정 consulting.



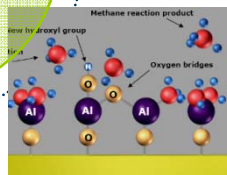
System Development



Coating Services



Process Development

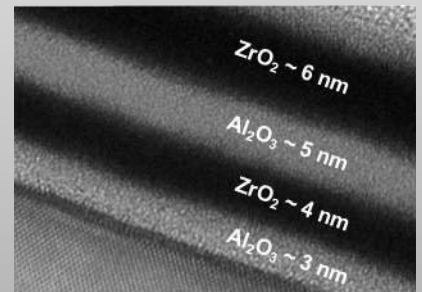


Process Consulting

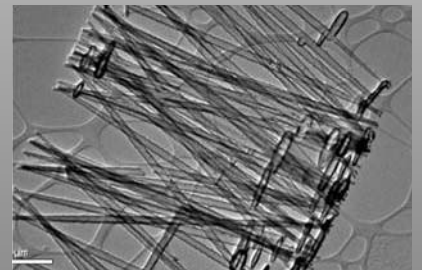


Benefits of Lucida ALD Series

- Various applications of R&D
- Very low price
- Various additional option (Plasma, liquid injection system)
- Good thickness uniformity and 100% conformal step coverage
- Advanced process kit and small-volume chamber for Short cycle times
- Extremely materialize ALD mechanism
- Small foot print
- Totally Integrated process module
- Easy process control
- Minimize gas supply line length



TEM image of $\text{Al}_2\text{O}_3/\text{ZrO}_2$ laminate structure by Lucida D100 ALD



TEM image of ZrO_2 nano tube with high AR by Lucida D100 ALD



TEM image of Ru film with high AR by Lucida M100 -PL ALD

Specification of Lucida ALD Series

- Traveling wave type ALD
- Small footprint
- Totally Integrated Process Module
 - Reactant Delivery and Source Container
- Gas Delivery System
 - Minimize gas supply line length
 - All Aluminum block heating without cool spots
 - Aluminum source heating block
 - Source cooling jacket with electric device system
- Variable optional system
 - additional 5 source bubbler
 - Liquid injection system (with vaporizer)
 - Plasma source(13.56MHz)
 - Ozone supply system
- PC-control including Windows user interface
 - Fully automatic process control
 - Control Software : Delphi program

ALD Materials & Applications

- High-k dielectrics (Al₂O₃, HfO₂, ZrO₂, Ta₂O₅)
- Conductive gate electrodes (Ir, Pt, Ru, TiN, TaN)
- Metal interconnects and liners (Ti, Ta, Cu, WN, TaN, Ru, Ir)
- Catalytic materials (Pt, Ir, Co, TiO₂, V₂O₅)
- Nanostructures (all ALD materials, nano tube, TiO₂, ZnO)
- Biomedical coatings (TiN, ZrN, TiAlN)
- Piezoelectric layers (ZnO, AlN, ZnS)
- Transparent Electrical Conductors (ZnO:Al, ITO)
- UV blocking layers (ZnO, TiO₂)
- Molecular Electronics (SAMs, OTS)
- OLED passivation (Al₂O₃)
- Photonic crystals (ZnO, ZnS:Mn, TiO₂, Ta₃N₅)
- Anti-reflection and optical filters (Al₂O₃, ZnS, SnO₂)
- Electroluminescent devices (SrS:Cu, ZnS:Mn, ZnS:Tb)
- Processing layers (Al₂O₃, ZrO₂)
- Optical applications (AlTiO, SnO₂, ZnO)
- Sensors (ZnO, SnO₂, Ta₂O₅)
- Wear, solid lubricant and corrosion inhibiting layers(Al₂O₃, ZrO₂)



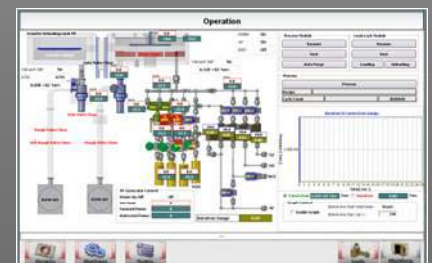
Compact source delivery system in Lucida D100 ALD



Load lock with Automatic transfer system



Electrical power drive panel in Lucida series



PC-control including Windows user interface in Lucida series



Lucida D100 ALD

Applications

- High-k Dielectrics
: Al₂O₃, HfO₂, ZrO₂, TiO₂
- 100mm wafers
- 100nm to ≤45nm devices

Benefits

- Applications of R&D.
- Very low price
- Various additional option (bubbler, liquid injection system)

Features

- ALD ultra-thin high-k dielectric with good thickness uniformity and 100% conformal step coverage
- Advanced process kit and small-volume chamber for Short cycle times
- Extremely materialize ALD Mechanism (Traveling wave Method)
- Small foot print(950X700mm)
- Totally Integrated process module
- Easy process control with Delphi software
- Minimize gas supply line length



Lucida D100	Technical specifications
Substrate size	150 mm (6 inch)
Sub. temperature	25℃ ~ 400℃
Precursor sources	2, heated (+H ₂ O source)
Film uniformity	<±2%
Foot print	950 x 700 mm
Deposition	High speed/high AR
Control	Delphi-PC
Optional	Ozone Generator
Optional	Up to 4 heated sources
Optional	Liquid injection system



Lucida M100-PL ALD

Applications

- Metal & Metal nitride
: Ti, Ta, Co, Ru, TiN, TaN, TiAlN
- 100mm wafers
- 100nm to ≤ 45 nm devices

Benefits

- Applications of R&D.
- Very low price
- Various additional option (Bubbler, liquid injection system)

Features

- ALD thin metal and metal nitride with good thickness uniformity and 100% conformal step coverage
- Advanced process kit and small-volume chamber for Short cycle times
- Extremely materialize ALD Mechanism
- Direct plasma system
- Small foot print(1000X700mm)
- Totally Integrated process module
- Easy process control with Delphi software
- Minimize gas supply line length
- Load-lock system



Lucida M100-PL	Technical specifications
Substrate size	100 mm (4 inch)
Sub. temperature	25 °C ~ 450 °C
Precursor sources	2, heated
Film uniformity	$< \pm 2\%$
Foot print	1000 x 700 mm
Deposition	High speed/high AR
Control	Delphi-PC
Optional	Up to 4 heated sources
Optional	Liquid injection system



Lucida C series MOCVD

Applications

- Oxide, Metal, Metal nitride
: ZnO, SrTiO₃, Ru, TiN,
- 100~200mm wafers
- 100nm to ≤45nm devices

Benefits

- Applications of R&D.
- Very low price
- Various additional option (Plasma System, liquid injection system)

Features

- MOCVD thin oxide, metal and metal nitride with good thickness uniformity
- Advanced process kit and small-volume Chamber
- Direct plasma system(optional)
- Small foot print(1000X700mm)
- Totally Integrated process module
- Easy process control with Delphi software
- Minimize gas supply line length
- Load-lock system



Lucida C200-PL	Technical specifications
Substrate size	200 mm (8 inch)
Sub. temperature	25℃ ~ 600 ℃
Precursor sources	3, heated
Foot print	1000 x 700 mm
Control	Delphi-PC
Optional	Up to 4 heated sources
Optional	Liquid injection system
Optional	plasma system



Lucida P series PECVD

Applications

- a-Si, Si₃N₄, SiO₂
- 100~200mm wafers

Benefits

- Applications of R&D.
- Very low price
- Various additional option (In-situ cleaning)

Features

- PECVD thin a-Si, Si₃N₄ and SiO₂ with good thickness uniformity
- Advanced process kit and small-volume Chamber
- Direct plasma system
- Small foot print(1000X700mm)
- Totally Integrated process module
- Easy process control with Delphi software
- Minimize gas supply line length
- Load-lock system



Lucida P200-PL	Technical specifications
Substrate size	200 mm (8 inch)
Sub. temperature	25℃ ~ 400 ℃
Process gas	5%SiH ₄ /N ₂ , NH ₃ , N ₂ O
Foot print	1000 x 700 mm
Control	Delphi-PC
Optional	System Cleaning