



The highest
quality ALD
systems for
demanding
applications.

PICOSUN® R-200 ADVANCED

The PICOSUN® R-200 Advanced ALD systems are suitable for R&D on dozens of applications such as IC components, MEMS devices, displays, LEDs, lasers, and 3D objects such as lenses, optics, jewelry, coins, and medical implants.

The PICOSUN® R-200 Advanced ALD system is the global market leader in advanced ALD research tools with hundreds of customer installations. It has become the tool of choice both for companies and research institutes driven by innovation.

The agile design enables the highest quality ALD film depositions together with the ultimate system flexibility to fit future needs and applications. The patented hot-wall design with fully separate inlets and instrumentation enables particle-free processing adaptable on a wide range of materials on wafers, 3D objects, and all nanoscale features. Excellent uniformity even on the most challenging through-porous, ultra-high aspect ratio, and nanoparticle samples is achieved thanks to our proprietary Picoflow™ technology. The PICOSUN® R-200 Advanced systems are equipped with highly functional and easily exchangeable precursor sources for liquid, gaseous, and solid chemicals. Highly efficient and patented remote plasma option enables deposition of metals without the risk of short-circuiting or plasma damage. Integration with glove boxes, UHV systems, manual and automated loaders, cluster tools, powder chambers, roll-to-roll chambers, and various in situ analytics systems enable efficient and flexible research with good results no matter what your research area is now or might become later on.

TECHNICAL FEATURES

Typical substrate size and type

- 50-200 mm single wafers
- 156 mm x 156 mm solar Si wafers
- 3D objects
- Powders and particles
- Mini-batch
- Porous, through-porous, and high aspect ratio (up to 1:2500)

Processing temperature

- 50 – 500°C, plasma 450°C (650 °C with heated chuck on request)

Typical processes

- Al₂O₃, TiO₂, SiO₂, Ta₂O₅, HfO₂, ZnO, ZrO₂, AlN, TiN, metals such as Pt or Ir

Substrate loading

- Manual loading with a pneumatic lift
- Load lock with magnetic manipulator arm
- Semi-automatic loading with handling robot
- Cassette-to-cassette loading with cluster tools

Precursors

- Liquid, solid, gas, ozone, plasma
- Up to 12 sources with 6 separate inlets (7 if the plasma option is chosen)

Options

- Cluster tools, Picoflow™ diffusion enhancer, roll-to-roll chamber, RGA, UHV compatibility, N₂ generator, gas scrubber, customized designs, glove box integration for inert loading

THE PRINCIPLE OF ALD



Introduction of molecules
containing element A.



Adsorption of the molecules
on the surface.



Introduction of molecules
containing element B and
reaction with element A on the
surface.



Completion of one monolayer
of compound AB.

Repeat cycle till desired film
thickness is reached.

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AN APPLIED MATERIALS COMPANY

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This technology is protected via
granted patents or is the subject of
pending patent applications.

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