

Fiji plasma atomic layer deposition (ALD) systems are designed for optimal performance and versatility for thermal and plasma ALD deposition.

Cambridge NanoTech is the leading provider of ALD solutions for research and industry worldwide, delivering expert services and versatile turnkey systems in a compact, economical package.



Performance

Designed to yield optimal uniformity and throughput for all deposition materials, the Fiji excels in thermal and plasma ALD processes, offering precise and digitally controlled ultra thin coatings.

- Optimized reactor and heater chuck shapes result in laminar flow that increases deposition uniformity while minimizing precursor use and cycle times.
- Interactive software and highly customizable experimental parameters allow rapid setup and execution of experiments with easy analysis of resulting data.
- Proprietary precursor delivery system with the optional ALD Booster™ for low vapor pressure precursors yields excellent film quality over the widest range of precursors.
- Three deposition modes allow precise control of deposition process including Exposure Mode™ for ultra-high aspect ratio features (up to 2,000:1 aspect ratio), Continuous Mode™ for rapid growth of conformal films, and Plasma Mode™ for difficult nitrides and metals.

pump options provide the largest experimental envelope for ALD research.

- Each chamber includes up to six independent precursor lines for solid, liquid, or gas chemistries and up to six plasma gas lines for maximum utility.
- Optional load lock available with or without turbo pump and your choice of a motorized or manual translation arm.
- Open architecture and modular design provide easy and flexible configuration and upgrades over the life of the Fiji.
- Easy integration of ellipsometry and other in-situ film metrology methods.

Versatility

Fiji is the most flexible system available for ALD research, featuring a modular design and many options that are customizable to meet your exact needs.

- Optional dual chamber configuration lets you run separate and independent experiments simultaneously.
- Optional 800 °C wafer chuck and turbo



F200 with load lock

Premium Value

The Fiji's breakthrough system design delivers unrivaled performance without compromise, within the budgets of most researchers.

- Simplified design captures the sophisticated processes of thermal and plasma ALD in an economical package.
- Our integrated ALD Shield™ allows excess reactive vapors to form a film before they reach the pumping system, preventing build-up of deposits on the plumbing and in the pump. This saves money in maintenance costs and prevents excess gases from being exhausted to the environment.
- Reduced operating costs and simplified maintenance made possible by lowest precursor consumption, fully integrated ALD Shield vapor trap, off-the-shelf replacement parts, and continuous flow inside plasma source.



F202 system

System Specifications	
Substrate size	Up to 200 mm
Dimensions (w x d x h)	F200: 1075 x 570 x 2130 mm F202: 1075 x 1140 x 2130 mm F200 with load lock: 2340 x 570 x 2130 mm
Cabinet	Removable aluminum panels, adjustable feet, optional cleanroom interface
Deposition Modes	High speed, high aspect ratio*, plasma-assisted
Operational Modes	Continuous Mode™ (high speed), Exposure Mode™, (high aspect ratio), Plasma Mode™ (plasma-assisted)
Power	220-240 VAC, 4500 W per reactor (excluding pump)
Control	LabVIEW™, USB, Windows™ PC
Substrate Temperature	500 °C (optional up to 800 °C)
Deposition Uniformity (Al ₂ O ₃)	1.5% (1σ)
Vacuum Pump	Optional dry pump, >50 CFM required, optional mag-lev turbo pump
Compatibility	Cleanroom class 100 compatible
Compliance	CE, CSA
Options	4 plasma lines standard, up to 6 lines available per reactor. In-situ analysis ports (ellipsometry, mass spectrometry, OES), glove box integration, load lock with manual or motorized transfer arm, dual chamber
Precursor Specifications	
Precursor Delivery System	4 lines standard, up to 6 lines available per reactor. Each line accommodates solid, liquid and gas precursors and is independently heated up to 200 °C (higher temperature optionally available.) Metal VCR seals.
Valves	Industry standard high speed ALD valves with 10 msec response time
Precursor Cylinders	Individually heated 50 ml stainless steel cylinders (up to 315 °C), optional larger cylinders available
Carrier/Venting Gas	N ₂ or Ar mass flow controlled, 200 SCCM
Options	ALD Booster™ for low vapor pressure precursors, ozone generator, liquid injection, higher-temperature ALD valves (>200 °C)

*with certain options

ALD Films

At the forefront of ALD precursor and ALD thin film research, Cambridge NanoTech scientists continuously add to the list of standard ALD recipes:

- Oxides: Al₂O₃, HfO₂, La₂O₃, SiO₂, TiO₂, ZnO, ZrO₂, Ta₂O₅, In₂O₃, SnO₂, ITO, Fe₂O₃, MnO_x, Nb₂O₅, MgO, Er₂O₃
- Nitrides: WN, Hf₃N₄, Zr₃N₄, AlN, TiN, NbN_x
- Metals: Ru, Pt, W, Ni, Fe, Co

These films, their nanolaminates, and many more materials and their recipes are available from Cambridge NanoTech's own staff, its partnerships, and its 200+ customer base.

Cambridge NanoTech, Savannah, ALD Booster, ALD Shield, Exposure Mode, and Plasma Mode are trademarks of Cambridge NanoTech, Inc. LabVIEW is a trademark of National Instruments Corporation. Strem Chemicals, Sigma-Aldrich, and MBraun are trademarks of their respective holders. Fiji is the subject of patents pending.

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- Included first year support provided by our ALD experts for recipe development, film characterization, research collaboration, and applications support.
- ALD recipes developed by our researchers are readily available and pre-packaged precursors are available from our chemical partners, Strem Chemicals, Inc. and Sigma-Aldrich, Inc.

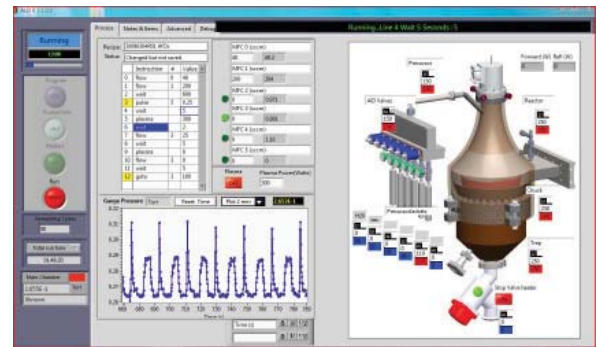
Flow-Optimized Chamber Design

A breakthrough in ALD system design, Fiji has the only chamber available today specifically designed for both plasma and thermal deposition. Our experts have performed comprehensive computational flow analyses and have engineered the optimal chamber shape and geometry to ensure even flow distribution over the substrate surface. The result is a uniquely shaped chamber that yields laminar flow, maximum radical efficiency, and uniform depositions.



LabVIEW™ Software

Control all key system parameters from substrate temperature to precursor dose with our LabVIEW-based software that is powerful, yet simple to learn and use. The LabVIEW program is easily expandable with our LabVIEW source code, provided for complete programmatic flexibility.



Glovebox Integration

The Fiji is readily integrated with MBraun™ gloveboxes for handling thin film samples in an advanced inert atmosphere system that is free of oxygen and moisture.

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Simply ALD

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