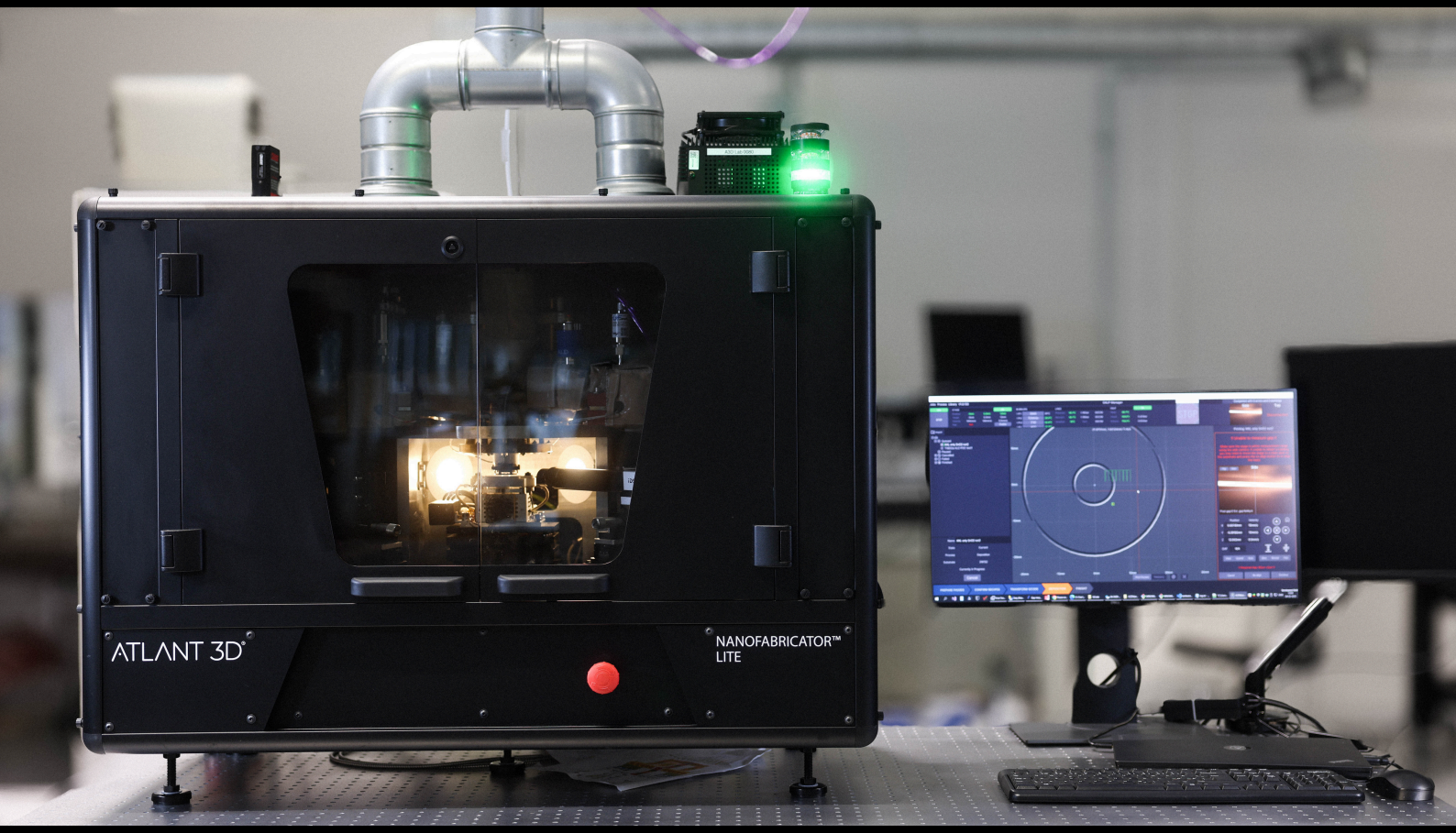
NANOFABRICATOR™ LITE



The NANOFABRICATOR™ LITE is the most versatile tool ever created for material and process innovation, as well as device prototyping, with atomic precision.

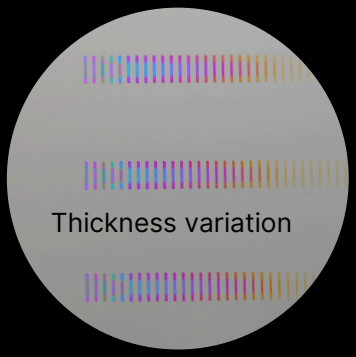
ATLANT 3D®


NANOFABRICATOR™
LITE

FEATURES & FUNCTIONS

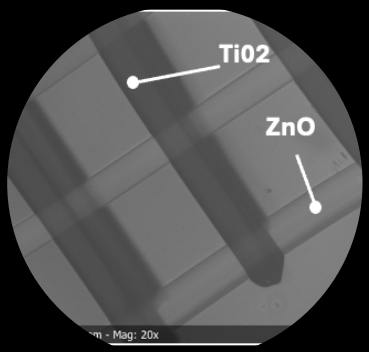
NANOFABRICATOR™ LITE enables rapid material and process testing, gradient-based deposition, and rapid design of experiments and device prototyping, reducing R&D timelines from months to weeks. It features integrated software with a streamlined workflow, a user-friendly interface, and industry-standard file formats (GDS-II and DXF), allowing users to design, preview, and adjust structures in real time for faster innovation and adoption.

Local deposition with atomical precise thickness control

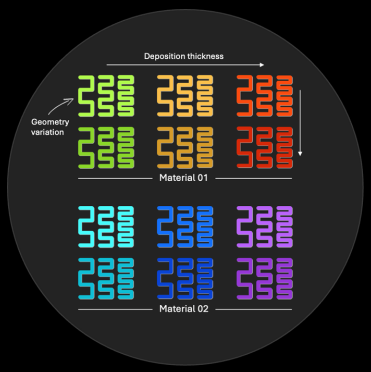


Gradient deposition

Multi-material Stack Printing



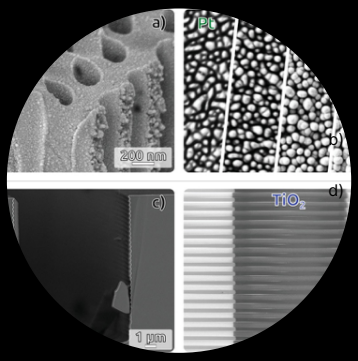
Rapid Design of Experiment



Modular printhead with exchangeable nozzles for different applications

Compatible surface morphologies

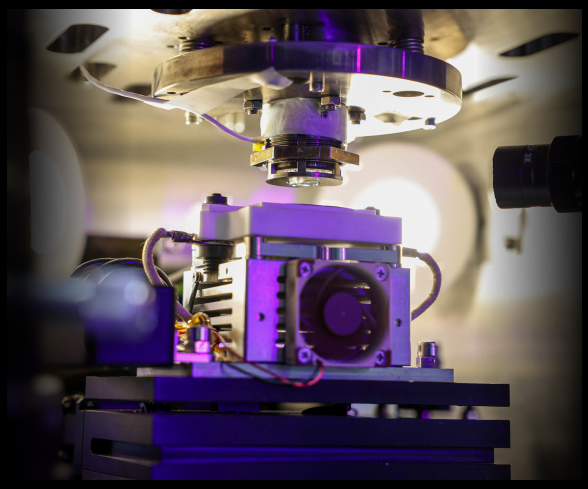
a)“Anodic” aluminum oxide macropores coated with Pt
b)Nanostructured black Si surface coated Pt different thickness
c)Si trench coated with a Pt carbon nanograss
d)Aligned Si trenches coated with a perpendicular line of TiO2



TECHNOLOGY

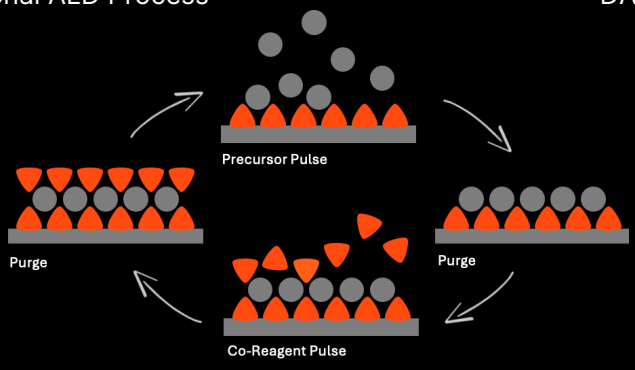
PATENTED DIRECT ATOMIC LAYER PROCESSING DALP® TECHNOLOGY

The NANOFABRICATOR™ LITE is the most versatile tool ever created for material and process innovation, as well as device prototyping, with atomic precision. It features localized Direct Atomic Layer Processing (DALP®) technology, which utilizes a proprietary microchemical Atomic Layer Deposition Reactor to enable unparalleled control and flexibility in material deposition, etching, and doping processes.

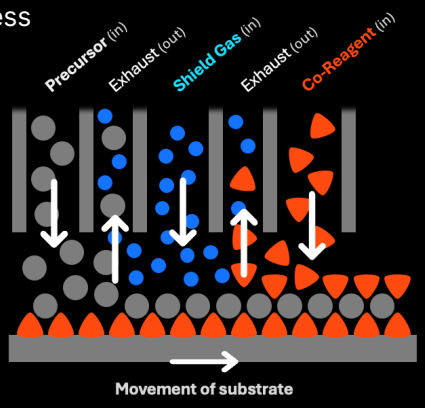


DALP® allows the localized processing of one atomic layer of material at a time, precisely in predefined patterns and areas. This process supports direct patterning across a wide range of surfaces and substrates, including semiconductors (Si, SiC, GaAs, Sapphire, InP, SiGe, Ge), glass, polymers, ceramics, and metals.

Traditional ALD Process



DALP® Process



SUSTAINABILITY WITH DALP® TECHNOLOGY: ADVANCING A GREENER FUTURE

Less Material Usage

DALP's direct processing minimizes material waste by eliminating unnecessary cuts and scraps. This efficient use of resources reduces costs while conserving raw materials.

Sustainable Processes for Prototyping

DALP® technology enables waste-free production, avoiding chemical etching and its associated pollutants. This eco-friendly approach ensures clean and sustainable prototyping for your projects.

Reduced Footprint and Energy Consumption

With shorter development and manufacturing cycles, DALP® dramatically reduces energy usage and carbon footprint. Faster processing means you save time while minimizing environmental impact.

TECHNICAL SPECIFICATIONS
NANOFABRICATOR™ LITE

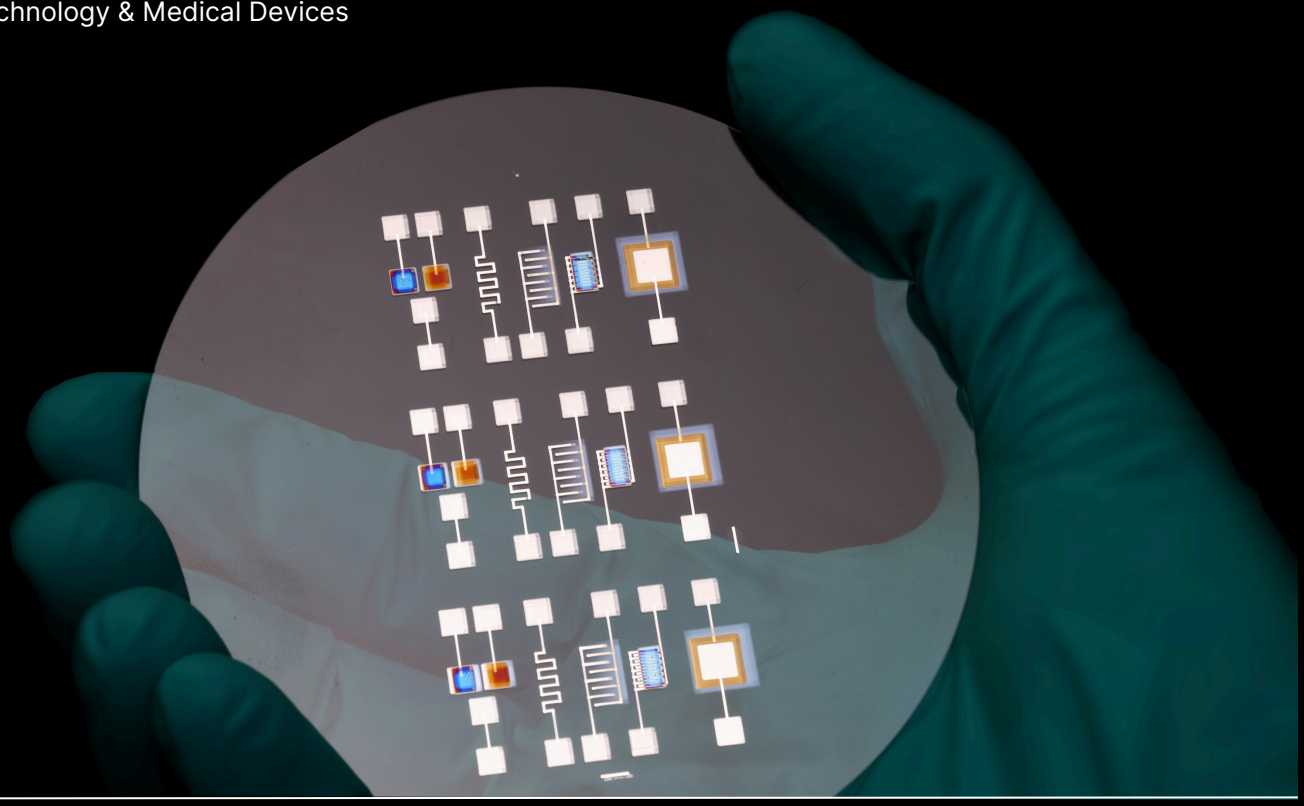
COMPONENT	PARAMETER	SPECIFICATION
Substrate Holder	Size	Up to 4” wafers
	Maximum thickness	10 mm
	Z direction shape	Flat
	Holding method	Vacuum
	Loading	Manual
	Heater temperature	50-300°C
	Heater temp. uniformity	+/- 1%
Process Chamber	Environment	Ambient, uncontrolled*
	Processing speed	Up to 200 mm/ sec
	Stage speed	10 – 200 mm/s
	Stage resoluiton	100 nm
	Deposition area	Up to 1.5 mm from wafer edge
Head	Nozzle resolution	350 µm (50 µm – 2 mm in development)
	Gap Head – Substrate	Interferometry
	Alignment Accuracy	5 µm
Gas System	Precursor temperature	RT - 150°C
	Nr. of precursor bubbler	2*
	Nr. of reactant bubbler	1*
	Nr. of gas reactant	1*

*) Optional Add-ons:
Inert, controlled environmental process chamber. Expected ready for ordering May 2025.
Extra precursor bubbler, max 3 total. Available at time of tool installation.
Extra reactant bubbler, max 3 total. Available at time of tool installation.
Extra gas reactant, max 2 total. Available at time of tool installation.
DALP resolution upgrades available on a running basis based on development completion. We can recommend some of our special nozzle types currently in development and to be tailored for customer applications.

APPLICATIONS

ATLANT 3D technology is applicable across various industries such as Semiconductors & Optics, Aerospace & Defense, Medical Devices & Biotechnology, Automotive & Energy with various applications:

- ALD / Advanced Materials R&D
- Sensors & MEMS
- Optics & Photonics
- Energy Applications
- RF & Printed Electronics
- Advanced Packaging and Semiconductor
- Biotechnology & Medical Devices



WHAT DO OUR CUSTOMERS SAY?

"We are excited to leverage the unprecedented capabilities of the ATLANT 3D the NANOFABRICATOR™ LITE to explore atomic-scale engineering of complex thin-film materials and interfaces. This cutting-edge tool will play a pivotal role in advancing our research into next-generation batteries, materials for analog neuromorphic computing, high-power GaN electronics, and active layers for perovskite solar cells, pushing the boundaries of what's possible in material science and device innovation."

Alexander C. Kozen,
Assistant Professor, Dep. Of Physics
The University of Vermont

University of Vermont

CONTACT

Get in touch with our Business Development Manager to discover how ATLANT 3D can transform your processes and keep you ahead of the curve, Atom by Atom®

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Download our application notes and whitepapers