



COMPANY PROFILE

2024-2025



Nano Vacuum Pty Ltd

Nano Vacuum's team brings over 60 years of expertise in the nanofabrication and aerospace industries, supporting customers through a network of trusted manufacturers and suppliers.

Our mission is to deliver exceptional service and guidance, offering cutting-edge nanofabrication tools to enhance your research and production efforts.

Our comprehensive range of fabrication, lithography, packaging, and characterisation solutions ensures you remain at the forefront of your research field or industry.

We are committed to providing you with the best resources, application knowledge, and tools to help you succeed, while exceeding your expectations with our service and value.

We look forward to collaborating with you on your next exciting project!

James Carter & Team Nano Vacuum

Our Partners



Testimonials

'Excellent service and support! Greatly appreciate it!'



'NanoVacuum supplies Good scientific support for our research with both quality hardware and sound technical advice.'



'Very responsive, helpful with prompt action.'



'Top notch customer service.'



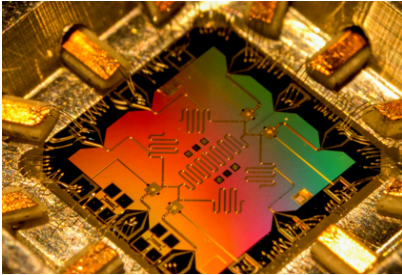
'James and the team at NanoVacuum are very quick to respond to any sales or service inquiries. NanoVacuum have worked tirelessly to support our needs on new projects and liaise with overseas suppliers to arrive at a solution that best suits our requirements and budget. I would thoroughly recommend them for any vacuum or inert environment equipment.'



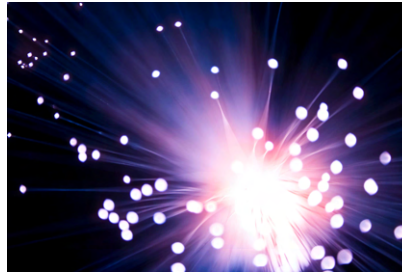
Our Customers



Applications



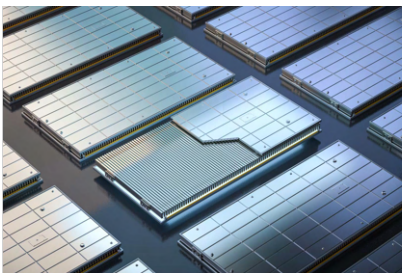
Quantum Computing



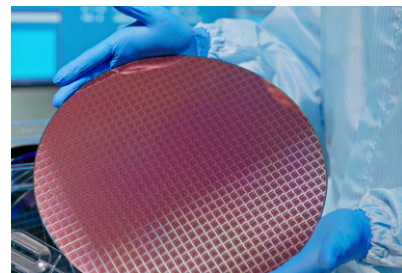
Photonics



Photovoltaics



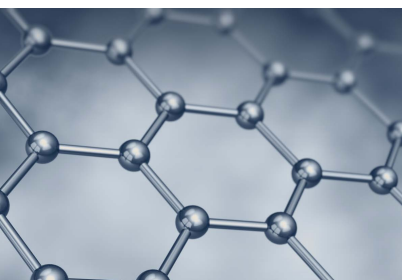
Batteries/Fuel Cells



Semiconductors



Wearable Electronics



2D Materials



MEMS



Microfluidics



High Energy Physics



Space



Surface Characterisation



ALD

- Compact benchtop ALD with pin-hole free films
- Up to 200mm wafers
- Thermal, plasma, and DALP technologies



Atmospheric Plasma

- Compact handheld plasma device
- Plasma cleaning & surface activation
- Cold active plasma can be used on a wide range of materials



Thin Film Deposition

- Sputtering | Thermal | E-Beam | Organics | MBE
- PLD | ALD | CVD | IBD
- Glovebox integration and cluster tools



Plasma Etch

- RIE | ICP | DRIE | DSIE | Bosch
- Atomic Layer Etching (ALE) | Ion beam etching (IBE)
- Standalone and cluster configurations



RTP/RTA Rapid Thermal Process

- Ramp rate up to 200K/sec
- Small pieces up to 300x300mm substrates
- Multiple gases including H₂



Laminar Flow/ Safety Cabinet

- Laminar flow with clean air to ISO4 & ULPA filter
- Safety cabinet for sterile materials handling



3D Nano Printing

- Stitch-less 3D lithography
- 1D, 2D, 2.5D & 3D structures
- Up to 4" substrates down to 100nm feature size and 10nm roughness



Direct Write Lithography

- Ultrafast speeds down to 300nm resolution
- Maskless aligner
- Advanced grayscale with up to 1024 gray levels



Thermal Scanning

- Quantum device lithography
- Structure size down to 15nm
- In-situ imaging = closed loop lithography



Spin Coater

- Spin coaters | Precision hotplates
- Spin modules | Spray coaters
- Developers | Spin rinser dryers



Photoresists & Photopolymers

- Negative Photoresists
- Positive Photoresists
- Hybrid Polymers
- Nanoimprint Resists
- Inkjet Materials



Inkjet Printing

- Inkjet printing system for functional materials
- Scalable processes from lab to industrial production
- Fully digital non-contact printing for PCBs and Solar Cells



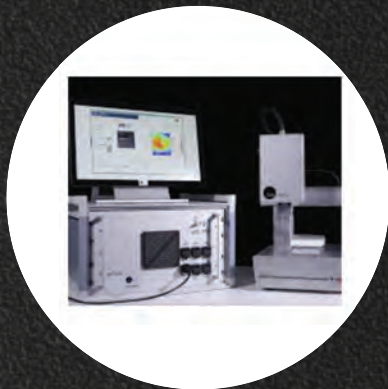
Space Simulation

- Standard and custom design chambers
- Nanosat, cubesat and larger payload testing
- Wide temperature ranges



Surface Science

- Near Ambient Pressure (NAP) XPS
- Photoelectron Spectroscopy & Microscopy solutions
- High-throughput and research tools



THz Spectroscopy

- Graphene & 2D material characterisation
- Non-destructive & non-contact
- Mobility & carrier density measurements



2D/3D Imaging

- Imaging from any angle, 2D, 3D, and cross-section
- Fully-motorized zoom/focus and sample manipulation
- Optical inspection, from large objects to samples with micron-sized features



SPM Control System

- Simple integration with almost any SPM
- High-speed and multipass scanning
- Interactive scan control with easy navigation



Quantum Transport

- High Speed DC Transport
- Up to 1000x faster than conventional measurement solutions
- User-friendly single handling



Wire Bonding

- Wedge & ball bonding in one tool
- Heavy wire & copper bonding
- Intuitive easy to use interface
- Fine/heavy wire and die bonder



Gloveboxes

- Inert atmosphere gloveboxes
- Integrated glovebox evaporators (OPV, OLED, Perovskite)
- Lowest leak rate on the market



Wafer Packaging

- Dicing/laser saw, polisher and grinder
- Substrate size from small pieces to 300mm diameter
- Ability to process multiple substrate materials



Modular Cleanrooms

- Constructed from freestanding aluminium framework
- ISO class 6 to 9 environments
- Standard and custom design solutions



Wire Bonder Tester

- Solutions for Measuring mechanical bond strength
- Market leading most accurate bond tester
- Revolving measurement unit with up to 6 sensors



Solder Reflow

- Substrate size from small pieces to 300x300mm
- Temperatures up to 650C
- MEMS high vacuum sealer option

Components & Consumables

NANOVACUUM



Chillers

- Recirculating water chillers
- Cooling range from 250W to 14kW
- Indoor or outdoor use | air or water cooled



Leak Detector

- Helium & hydrogen leak detector
- Low cost of ownership
- Rapid startup & lightweight



Gauges

- Pirani | Piezo | Capacitance Manometer | Cold Cathode | Ion | Wide Range | Thermocouple | Strain
- Convection | Capsule | RGAs



Pumps & Valves

- Diaphragm | Rotary Vane | Roots/Booster | Scroll
- Turbo | Ion | Cryo | Getter | Screw | Diff | Liquid Ring
- Valves - Gate | Diaphragm | Angle | Ball | Butterfly



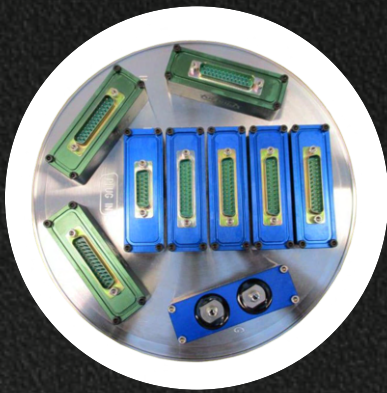
Vacuum Fittings

- KF | ISO | CF
- Clamps | Centering Rings | Hoses | Gaskets | Tee's
- Crosses | Chambers | Feedthroughs | Adaptors



Gas Fittings

- Industry Standard gas fittings
- Gas Valves | UHP | Medium & High Pressure
- Semiconductor Grade Sampling systems



Feed Throughs

- Standard electrical, temperature and instrument
- Custom for space applications
- UHV and HV compatible



MFCs

- Mass Flow controllers & meters
- Analog and digital versions
- Flow rates from 2sccm to 300slm



Deposition Materials

- Sputter targets | Evaporation pellets
- E-beam crucibles | Quartz crystal sensors



Sealants & Lubricants

- High vacuum greases
- Vacuum sealants
- Lubricants
- Waxes



Fluids & Oils

Essential consumables for oil lubricated vacuum pumps, from traditional hydrocarbon-based to specialised Silicone & PFPE (Fomblin/Krytox) fluids



Photoresists & Photopolymers

- Negative Photoresists
- Positive Photoresists
- Hybrid Polymers
- Nanoimprint Resists
- Inkjet Materials



System Engineering

- Vacuum system design, engineering and fabrication
- Custom high vacuum pump carts
- System control automation including vacuum pumping, venting, temperature control and deposition
- 3D CAD modeling and design



Vacuum Pump Servicing

- We service all types of pumps including rotary vane, scroll, diaphragm, turbo, cryo...
- All manufacturers can be serviced by our skilled engineers
- Pre and post service report is provided including photos, pressure data and recommendations



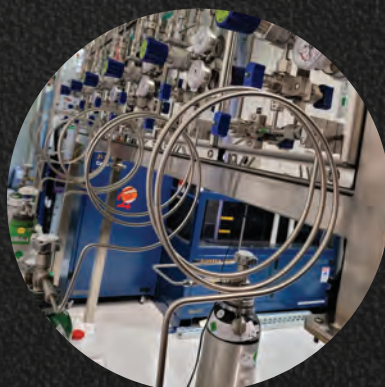
NanoFab Tool Service

- Service of all nanofab deposition & etch tools
- Upgrades, retrofits & relocation
- Health checks



Leak Detection Service

- Labour & Helium/Hydrogen leak detection service for vacuum or pressure applications
- Helium/ Hydrogen leak detector rental for your own project
- Calibration certificate available on request



Turnkey Cleanroom Installations

- Design consultation and project management of cleanroom services and build
- Design, installation & commissioning of all UHP gas lines, toxic gas cabinets & essential tool services
- Supply, installation & commissioning of fabrication, lithography and characterisation tools



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ENABLING NANOFABRICATION



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