

Designed to Scale. Optimized for Yield.

Solutions for
Micro-Optics Fabrication
and Glass Mold Coating

Our Expertise

We develop advanced thin-film coating solutions that solve real-world tribology and performance challenges, making your products tougher, superior, and more sustainable.



Over **25 Years**
of Enabling Product
Innovations through
Nanotechnology



100+
Patents &
Trademarks



8 Million+
Daily Output for High Mix
High Volume Parts

Advanced Materials

Functional & decorative
surface coatings

Nanofab

Precision nanoscale
components

Advanced Technology Research Center (ATRC)

In-house innovation hub
for next-gen coatings

Industrial Equipment

Turnkey vacuum
coating systems

Sydhrogen Energy

Hydrogen fuel cell
coating solutions

NTI-NTU Corp Lab

Transforming academic
breakthroughs into
real-world solutions



Our Presence

(*) Location of NTI Nanofilm's Sales Agent

Germany

India

Thailand*

Singapore

China

Taiwan*

South Korea*

Japan

Vietnam

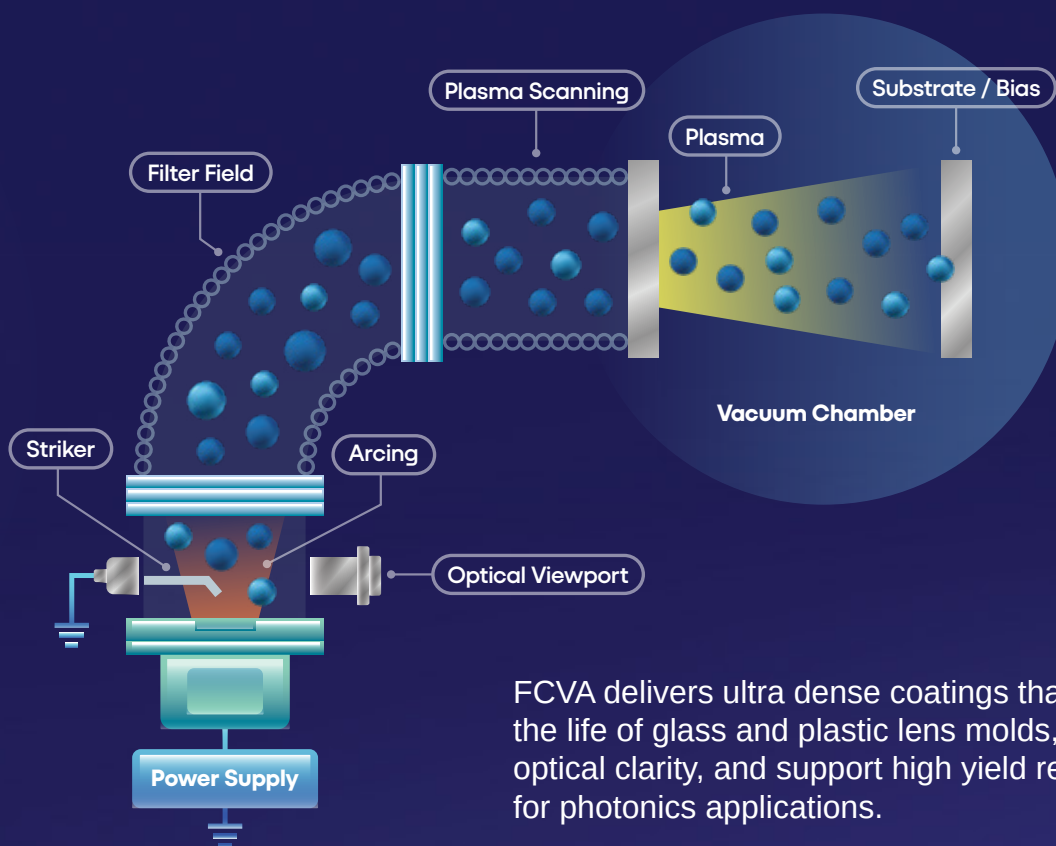
Malaysia*



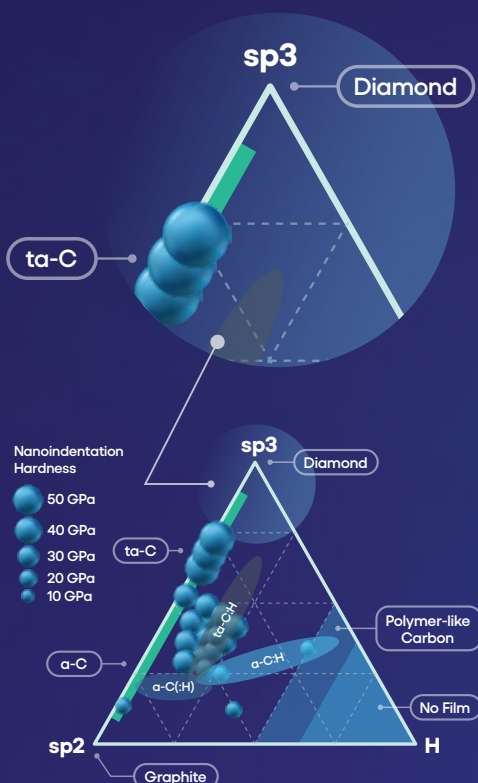
Advanced
Materials

FCVA Technology

The Benchmark for Advanced Thin Films



FCVA delivers ultra dense coatings that extend the life of glass and plastic lens molds, enhance optical clarity, and support high yield replication for photonics applications.



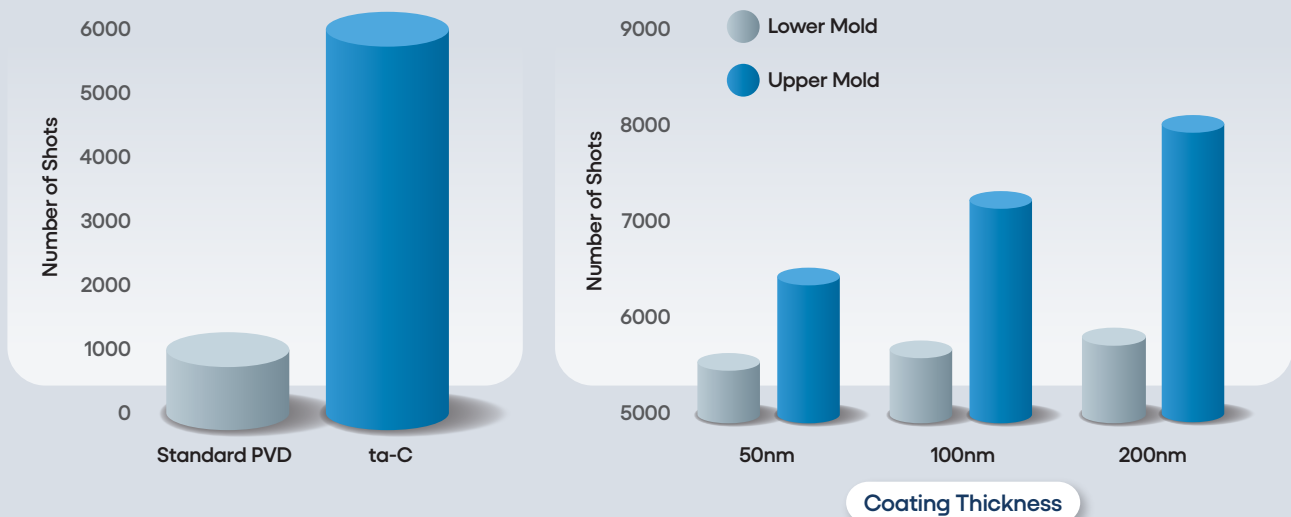
Deposition Source	NTI Nanofilm Ions	Standard PVD Atoms
Diamond %	~85	~25
Hardness (Hv)	≤5500	≤3000
Adhesion	Excellent	Good
Wear Rate	1×10 ⁻⁸	8×10 ⁻⁸
COF, Friction	<0.1	~0.14
Coating Temp (°C)	<100	200 – 500
Thickness (μm)	0.1 – 50	0.1 – 5
Film Density (g/cm ³)	~3.4	~2.2
Coating Uniformity	Software adjustable	Hardware dependent
Color	Grey/dark, hybrid multicolor	Wide range incl. rose, burgundy
Substrates	Metal, ceramics, rubbers, plastics	Metals, ceramics



Industrial
Equipment

Boost Optical Mold Performance and Lifespan with FCVA based Coating

Leverage the power of FCVA (Filtered Cathodic Vacuum Arc) technology with ta-C coatings delivering unmatched durability and optical clarity for high precision lens molds.



Benefits of ta-C over Standard PVD

- **Extended Shot Life**
 - ta-C delivers up to 6x more shots than Standard PVD
- **Reduced Downtime**
 - 6x more shots means reduced maintenance frequency
- **Lower Coating Cost per Shot**
 - ta-C reduces coating cost per shot by up to 83% lower than Standard PVD

ta-C Coating Performance:

- **Extended Upper Mold Life**
 - 200 nm ta-C coating delivers up to 30% more shots on the upper mold
- **Improved Lower Mold Durability**
 - Boosts wear resistance by up to 10% on the lower mold
- **Optimized Shot Efficiency**
 - Maximizes shot count across both molds with 200 nm ta-C coating

* The technical specifications are based on proven solutions across applications. Our products are customizable to meet specific needs. Test results follow ISO standards, but performance may vary based on environment and use. Claims are for guidance, and we recommend customers independently verify suitability for their specific use cases.



Comprehensive Solution for the Glass Lens Mold Lifecycle

Producing high-precision glass lenses requires molds that can endure extreme heat while maintaining surface integrity. However, continuous exposure to molten glass often causes corrosion and adhesion, leading to frequent cleaning, accelerated wear, and costly replacements.

NTI Nanofilm's advanced Mold Coater and Decoater system offers a complete lifecycle solution.

- The Mold Coater applies ultra-smooth, high-purity ta-C coatings that resist thermal damage and wear, significantly extending molding cycles.
- The Decoater uses ion beam etching to gently remove worn coatings without harming the mold surface, ensuring fast, repeatable refurbishment and consistent performance.





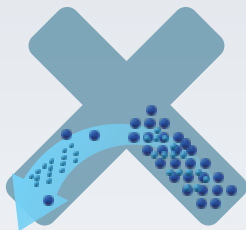
Industrial
Equipment

Revolutionizing Precision Manufacturing

Mold Coater

Our FCVA Hybrid Mold Coater integrates cutting-edge Filtered Cathodic Vacuum Arc (FCVA) technology to deliver superior coatings for molds and tools. Designed for durability and precision, it addresses critical challenges in industries.

X-Bend, a proprietary advancement in Filtered Cathodic Vacuum Arc (FCVA) technology, revolutionizes coating processes with its unique design. Engineered to optimize arc stability and minimize particle generation.



Key Features:

- >90% fewer microparticles, cleaner coatings
- 3x longer mold lifespan, lower costs
- Stable arc, consistent surface quality

Mold Coater

Available in different models
(6x, 10x, 12x)



Chamber Dimension	Process Chamber
	0.7 (L) x 0.6 (W) x 0.55 (H) m
	Load Lock Chamber
	0.5 (L) x 0.5 (W) x 0.52 (H) m
FCVA Carbon Source	Fully-Automated TAC-ON®
Ion Beam Source	Ion Bombardment on High-Energy Argon Ions
System Dimension	≈ 5.4 (L) x 2.9 (W) x 2.4 (H) m
High Vacuum Pump	> 2000 L/s (Process Chamber)
	800 L/s (Load-Lock Chamber)
Dimension & Coating Range	Up to 0.30 (ø) x 0.07 (H) m (6", 10" and 12")
Coating Thickness	50 nm - 5 µm
Material Compatibility	Glass, Polymer



Advanced Solutions for Mold Restoration

Decoater

Our advanced decoating system provides a versatile solution for precision processes, whether using the NDC 300 ion beam etching system with adjustable parameters, our integrated approach delivers superior decoating results. Working in tandem with our Coater, this streamlined system ensures efficiency and precision for a wide range of coating needs.

Key Features:

- Adjust pressure to achieve different etching rates
- 12-inch diameter capacity accommodates various sample sizes
- Clean removal allows for easy recoating



**Decoater
(NDC 300)**

Chamber Dimension	0.36 (Ø) x 0.23 (H) m
Chamber Material	SUS 304
Reactor Type	End-Hall Ion Beam Source
Base Vacuum	2×10^{-4} Pa
Working Pressure	~ 0.17 Pa
Etching Time	1.67 Å/s
Process Gas Type	Ar or O ₂

Power Input	3Ph 208Vac +E / 3Ph 400Vac +N+E (Voltage per local requirements)
Power Source	Ion Beam Power: 0–2 kV (DC/Pulse) Bias Power: 0–1 kV (Pulse, 40 kHz, Duty 20–80%)
Substrate Dimension	0.30 (Ø) x 0.07 (H) m
System Dimension	~ 1.40 (L) x 1.10 (W) x 1.73 (H) m



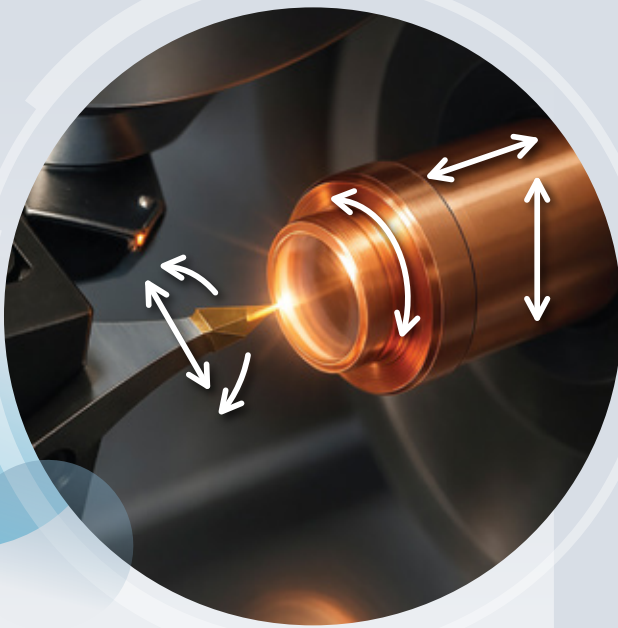
Nanofab

Maximise Optical Performance

With End-to-End Nanofabrication Services

Achieve advanced optical manufacturing with our proprietary CAM software and 5 Axis Diamond Turning, designed to produce ultra precise, reflowable micro-optics with complex geometries and nano-level finishes.

Supporting both injection, molding and replication, our end-to-end process ensures scalable, high-accuracy production for a wide range of polymer optical components.



Key Features:

- Full 5 axis synchronous NC programming diamond turning
- Realize complex shape micro-optics
- Thin $<0.3\text{mm}$ & reflowable
- Profile accuracy $<0.1\mu\text{m}$
- Surface roughness $<5\text{-}10\text{nm (ra)}$



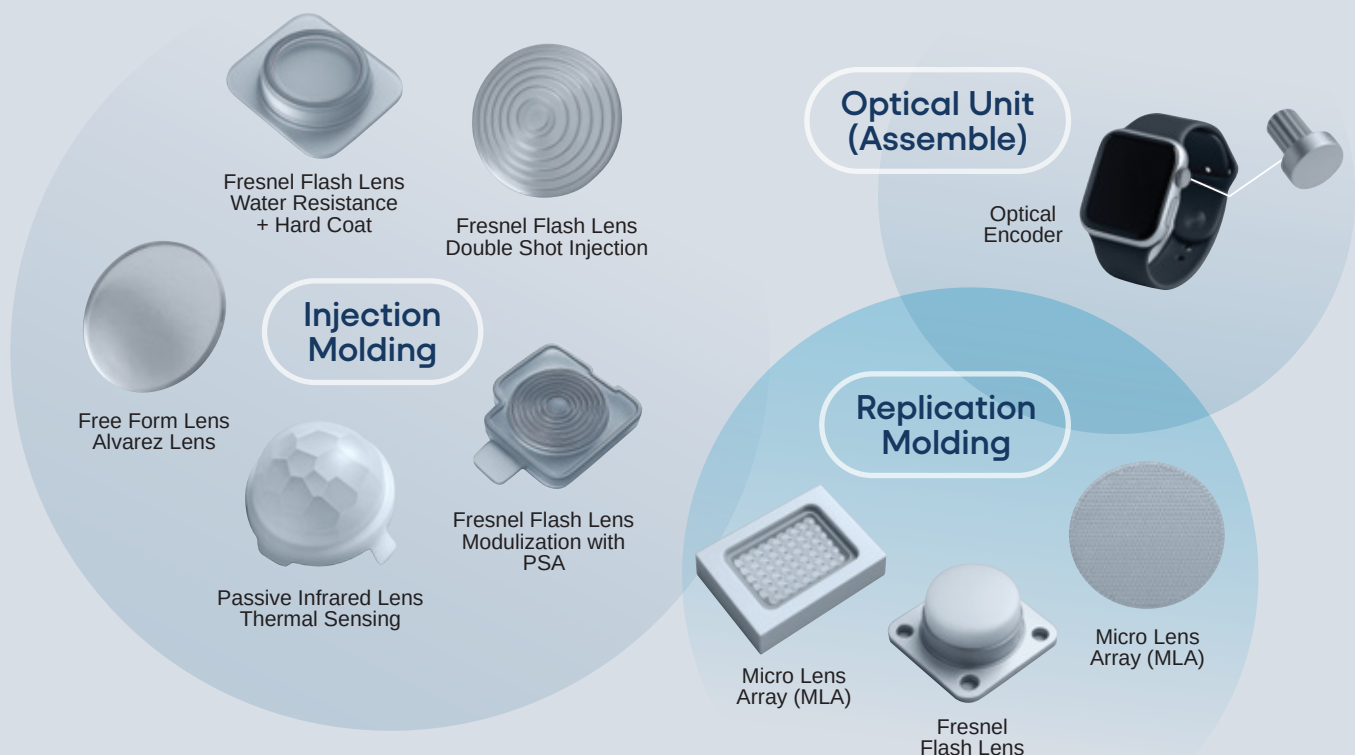


Nanofab

Scalable Optical Solutions

For Every Application

Nanofab delivers a full suite of polymer optics, supporting end-to-end manufacturing for Time-of-flight (ToF) 3D sensing, endoscopes, wearables, and more including PIR lenses, Fresnel flash lenses, and wafer level MLAs via injection and replication molding.



Fine Fresnel Lens

The invisible line Fresnel lens, also known as a Kinoform lens, is widely used in AR/VR applications, enabling highly precise focusing and imaging.

Key Features:

- The lens is flat and thin. Range about 20-100 μ m
- With sharp Fresnel and high precision contour
- Ultra-lightweight



Notes



Notes



Contact us



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