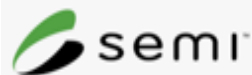


## Hi-Nano's Innovative Technologies 2024



Hi-Nano Optoelectronics Co., Ltd.

# Hi-Nano's Fab 1 & Fab 2

Location: Yilan Science Park,  
Taiwan



Hi-Nano Optoelectronics Co., Ltd.

# Engineering Team's background Expertise

Our engineering team pioneers the design and manufacturing of semiconductor processing equipment. These photos showcase our products before.



1



2



3



4



5



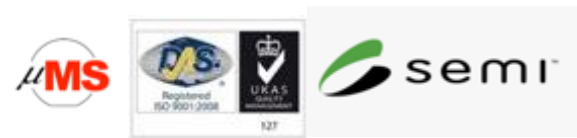
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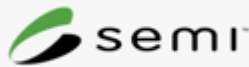
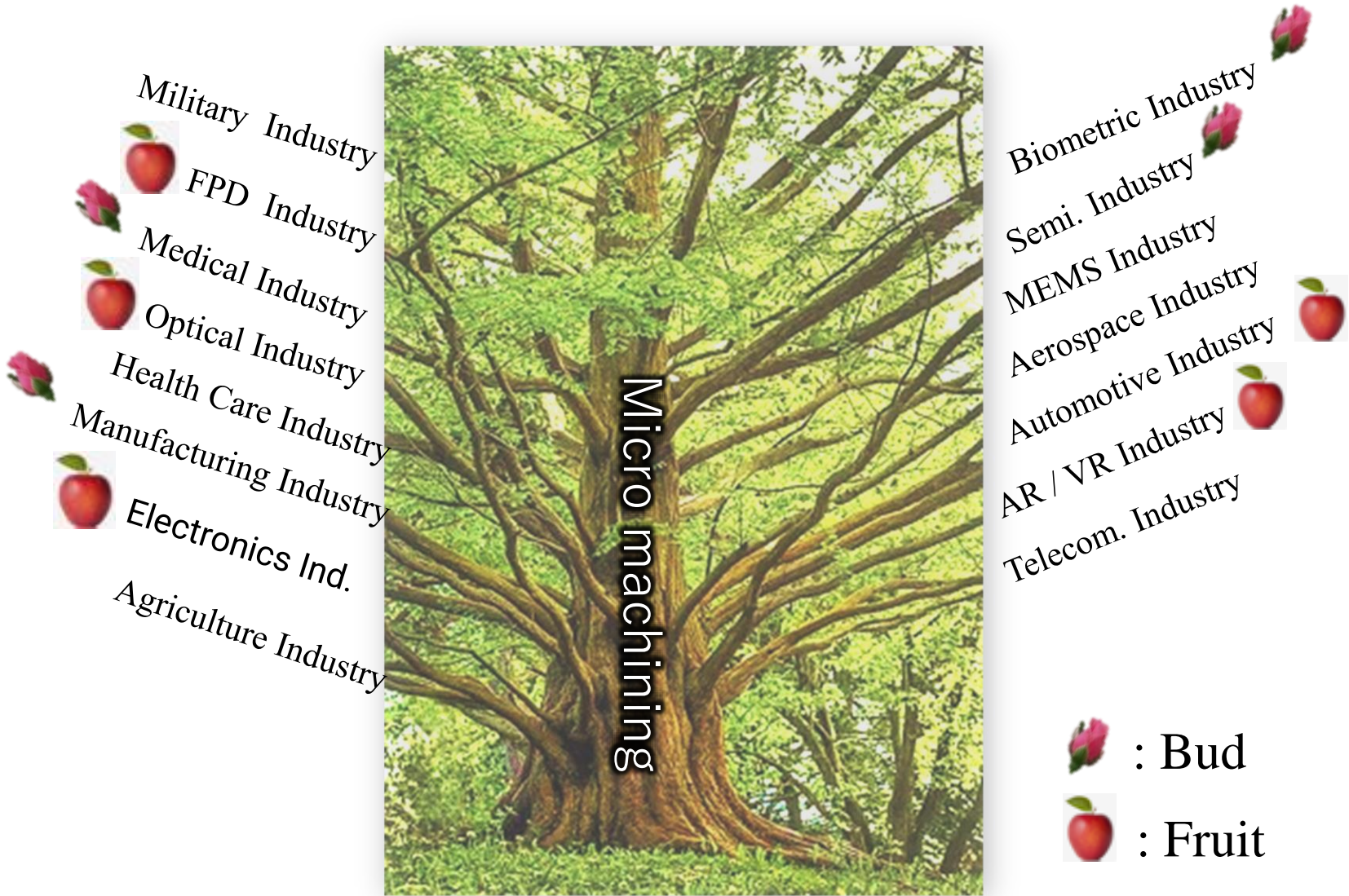
Hi-Nano Optoelectronics Co., Ltd.

# Hi-Nano dedicates in **laser micromachining**

Our team members have been working in the micromachining field both as individuals and collectively as a team for many years. We actively participate in developing our systems through partnerships with the latest international micromachining technologies and trends.



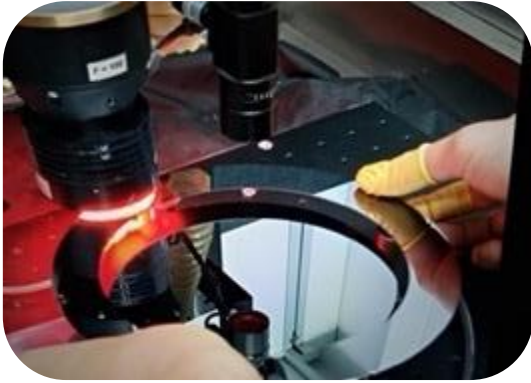
# Application Tree



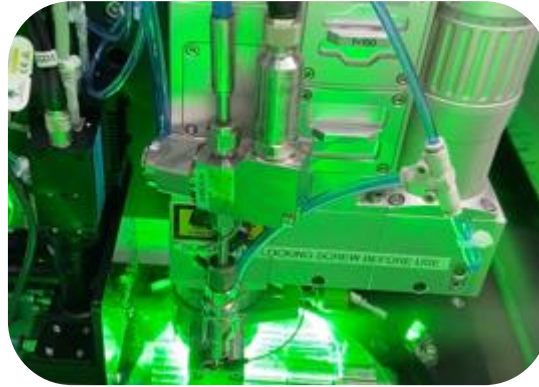
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# Products & Services

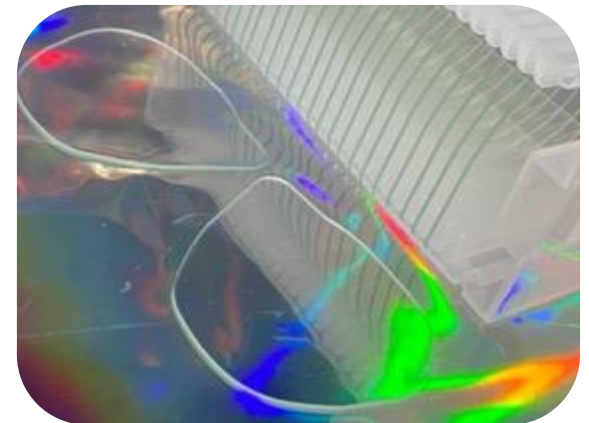
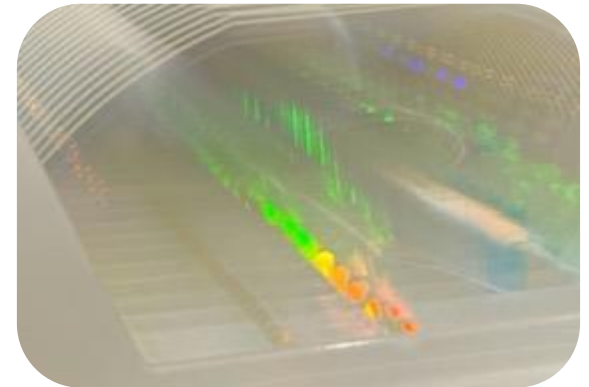
## 1. Job shop Services



## 2. Laser system manufacturing

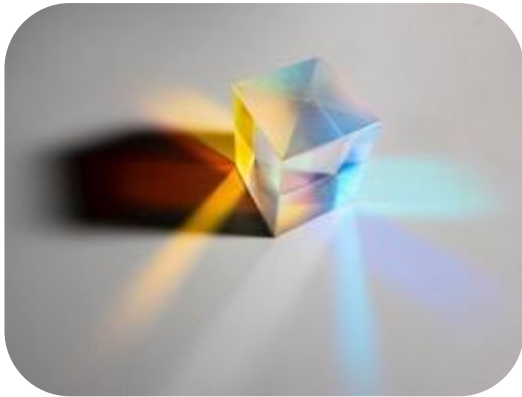


## 3. Micromachining solutions

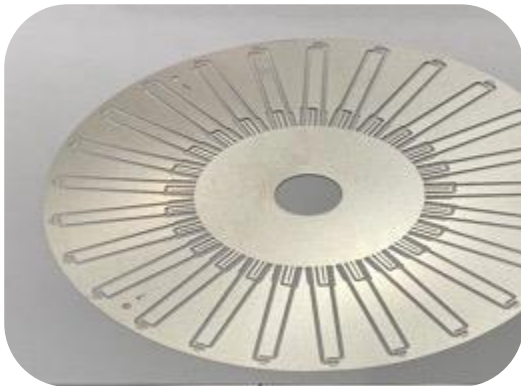


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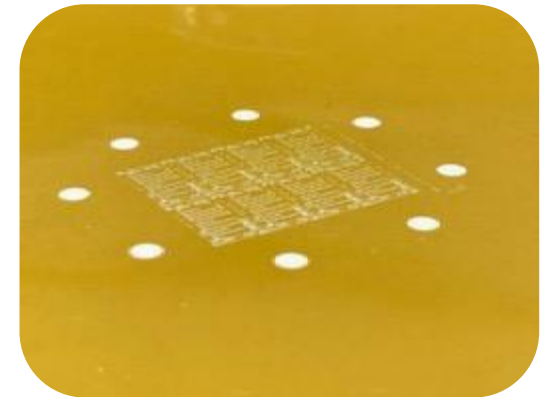
# Machinable Material Categories



- ✓ Optical Glass & Quartz
- ✓ Diamonds and Sapphire
- ✓ Silicon & SiC
- ✓ Ceramics
- ✓ Polymers and PI



- ( Kapton )
- ✓ Metals
- ✓ Cutting-Edge Advanced Materials

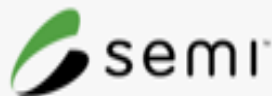
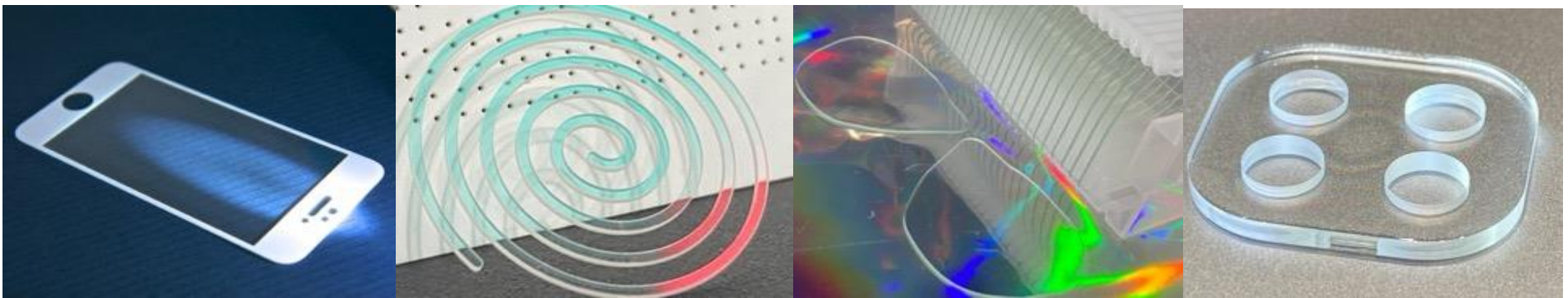


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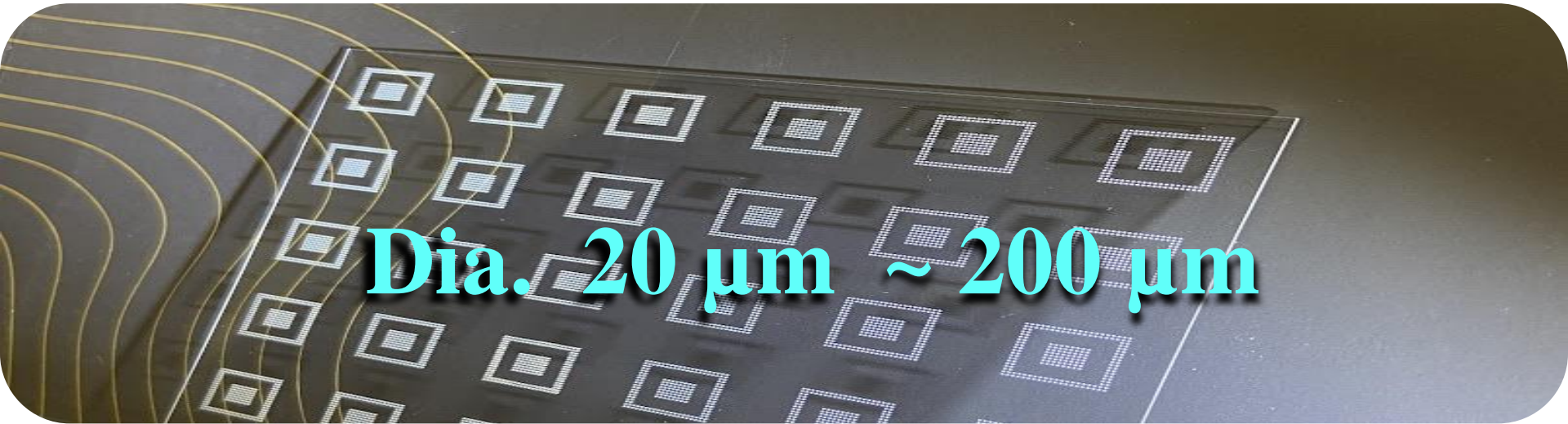
# Laser Glass Cutting and Drilling

Thickness range from 25  $\mu\text{m}$  ~ 10 mm



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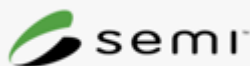
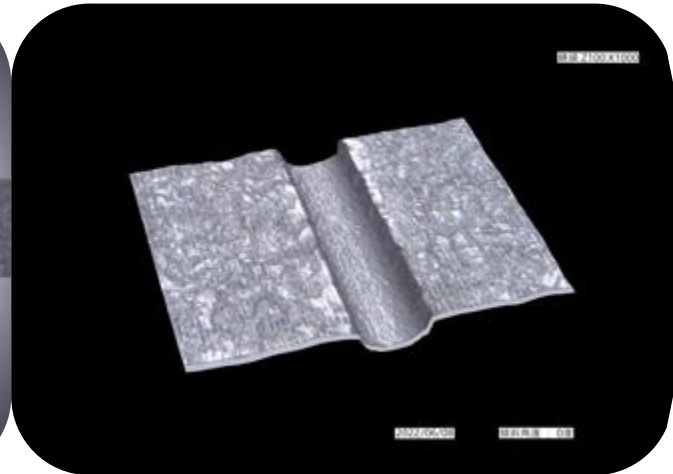
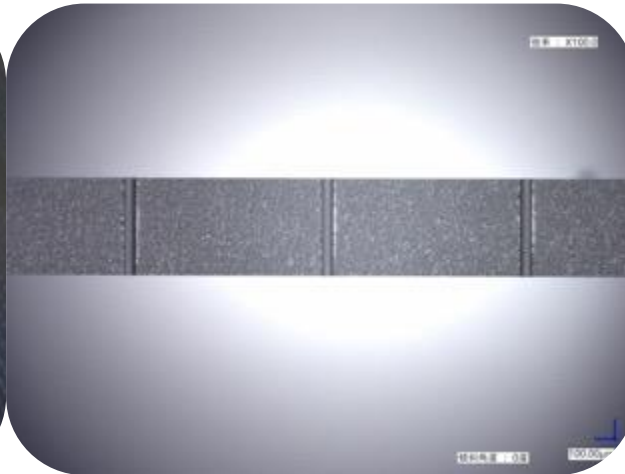
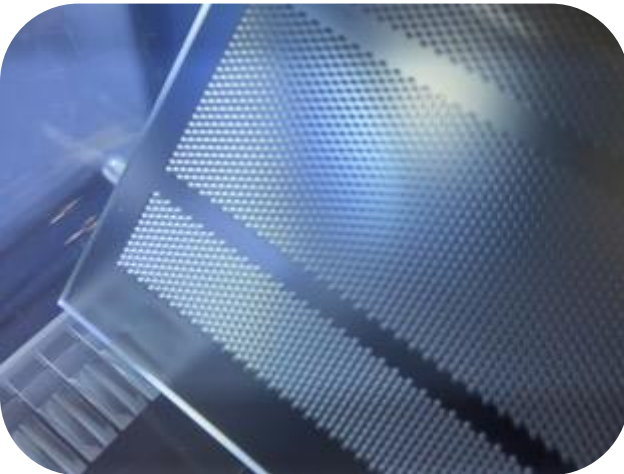




**Dia. 20  $\mu\text{m}$  ~ 200  $\mu\text{m}$**

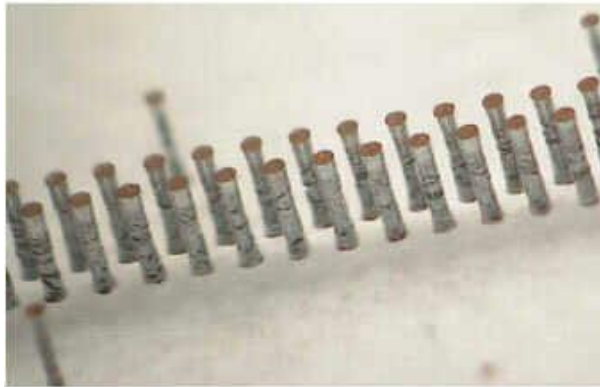
## TGV ( Through Glass Vias )

TGV (Through-Glass Vias) technology is a key for advanced IC 3D packaging and Low Loss substrates in 5G, 6G, and LEO high-frequency telecom. Hi-Nano is your one-stop total solution provider, covering everything from concept to production equipment.



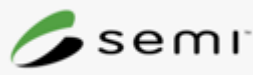
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# TGV / IC Glass Interposer / Low Loss substrates



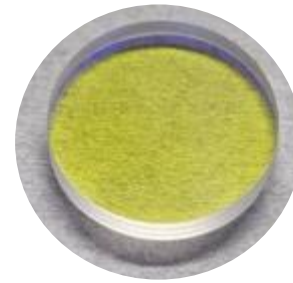
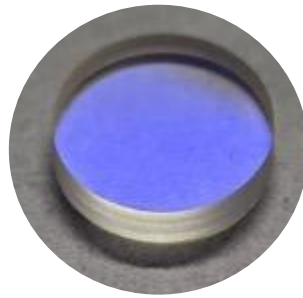
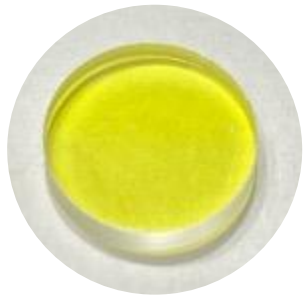
## Applications:

- IC 3D Packaging
- 5G / 6G Tele-communication
- Low earth orbit satellite communication
- IPD 3D packaging



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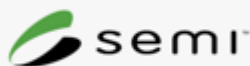
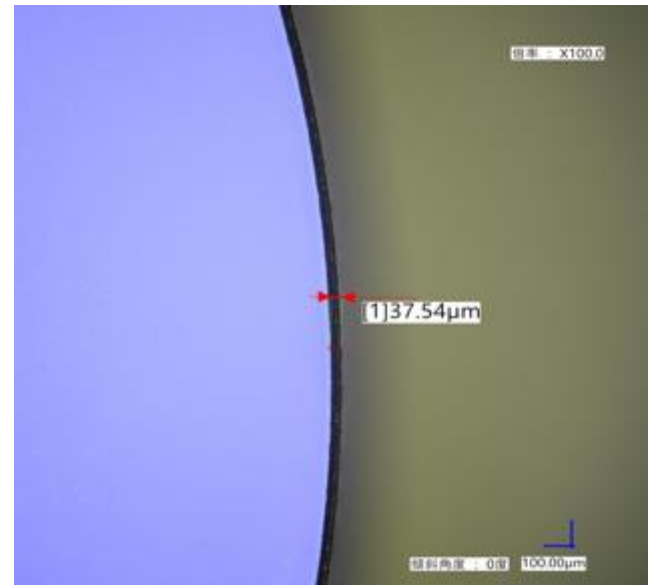
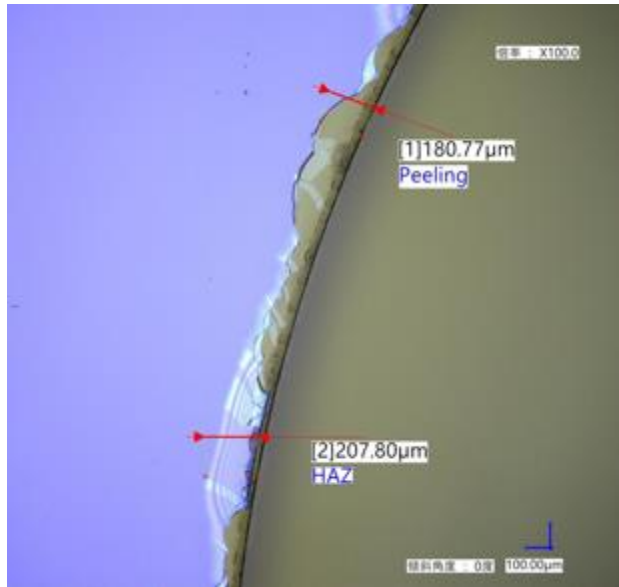
# Chipping free dicing technology



Conversional technology

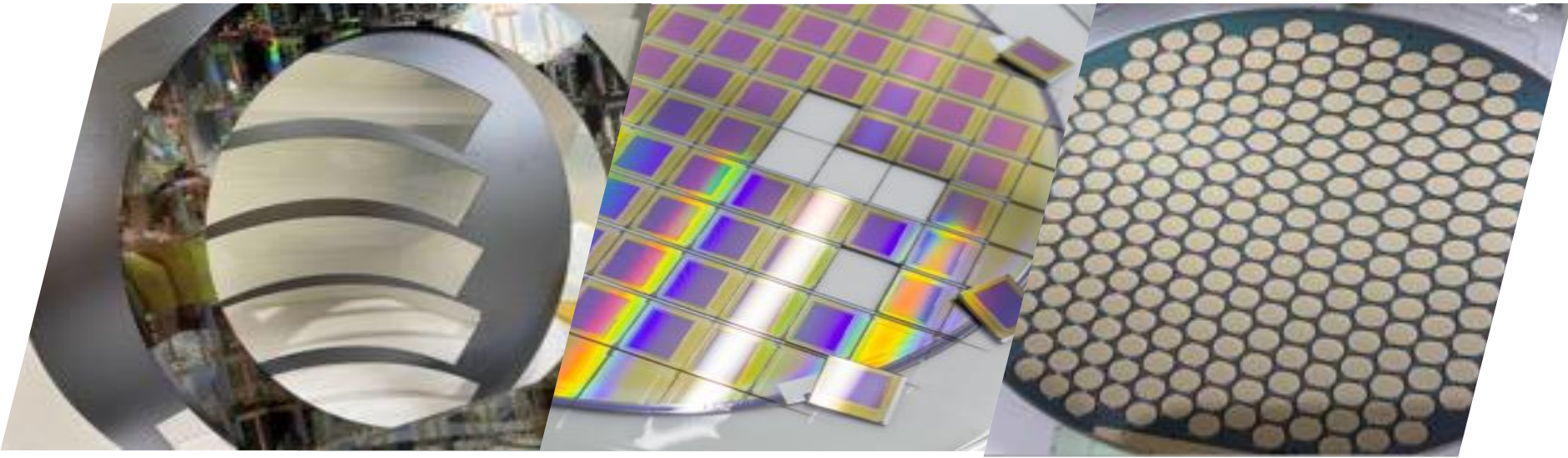
vs

Hi-Nano's technology

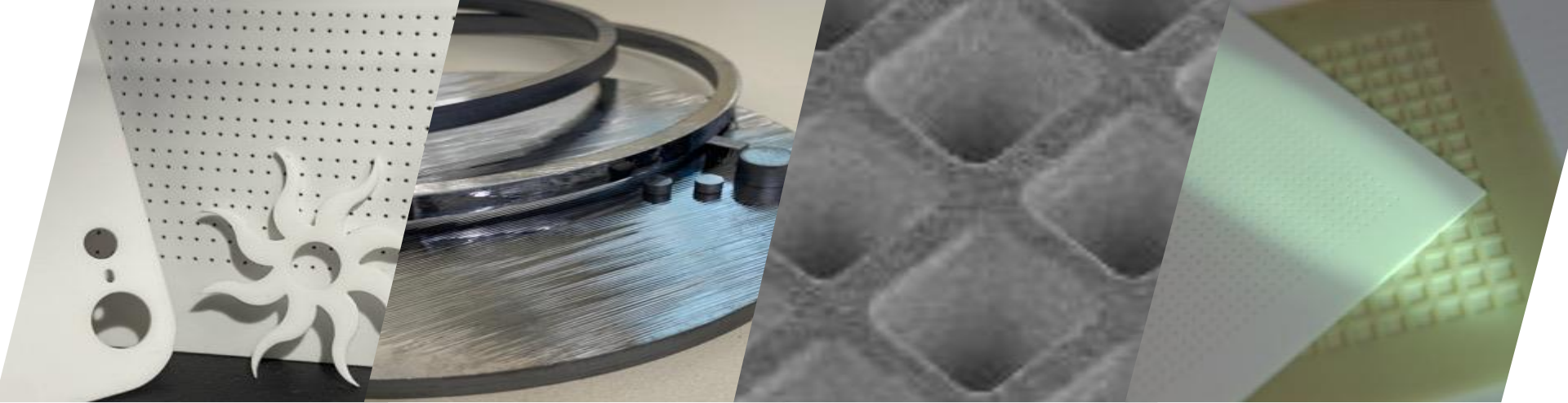


# *Innovated Silicon Wafer Dicing*

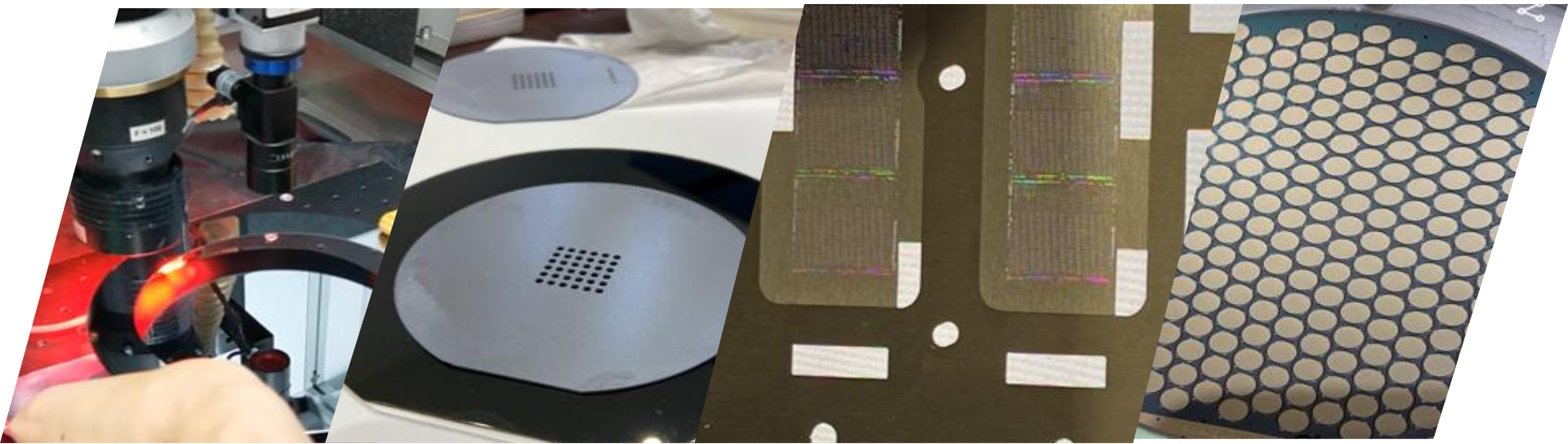
Our dicing and grooving technology surpasses traditional diamond saws, allowing us to dice wafers into custom shapes and perform selective dicing and hole drilling all in one laser system.



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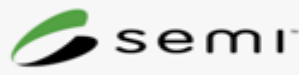
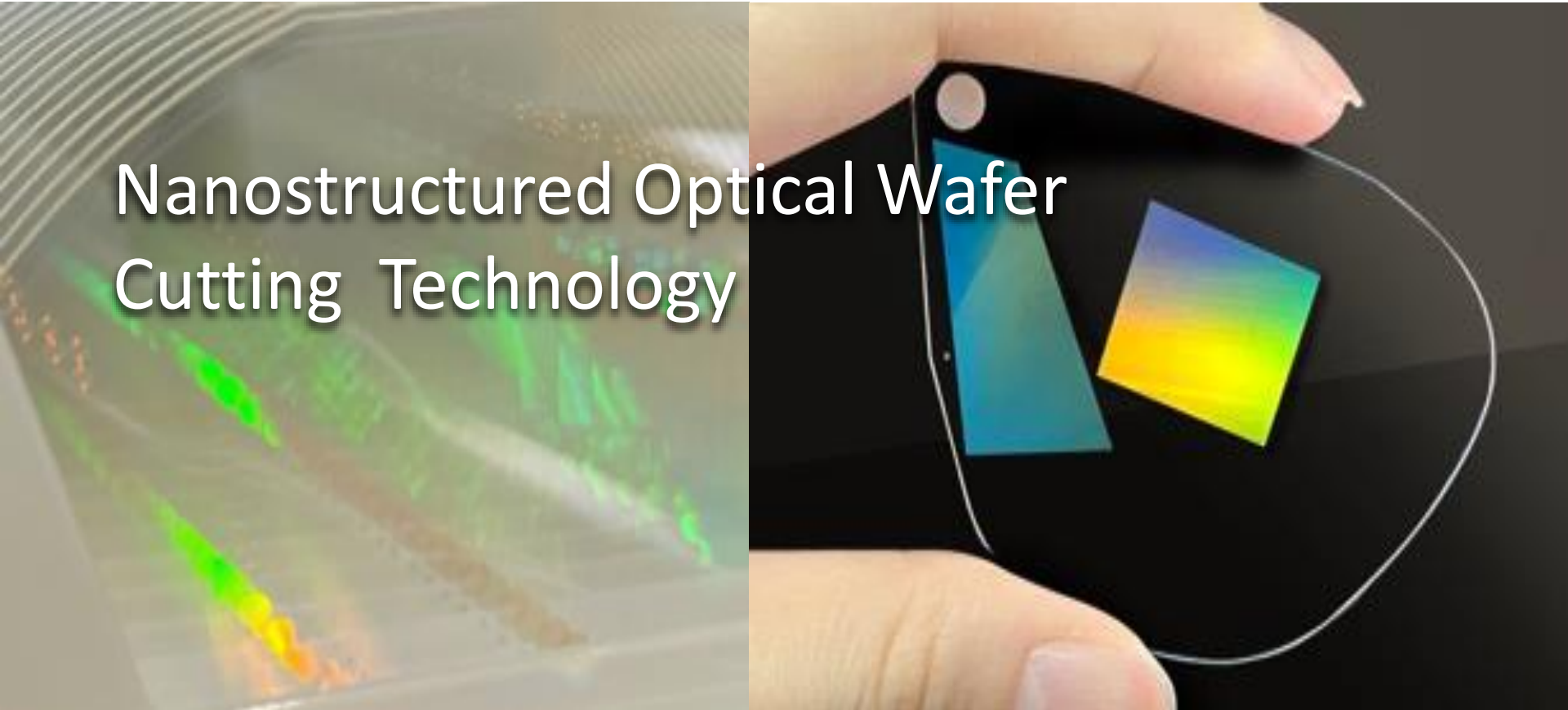
## Laser Micro Machining of Silicon and Ceramics



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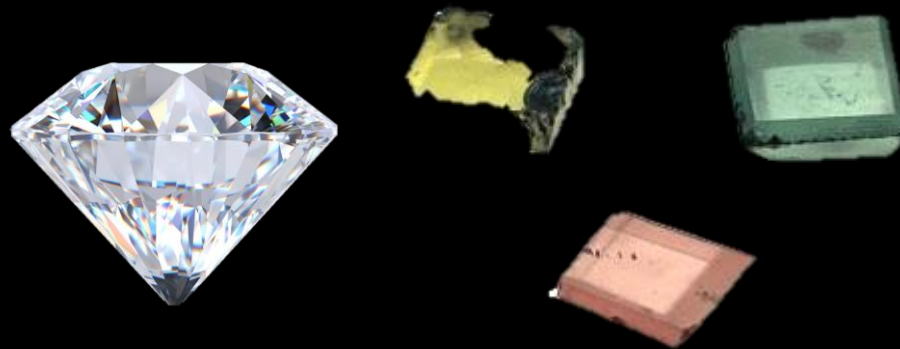
AR / VR / MR Lenses

Nanostructured Optical Wafer  
Cutting Technology

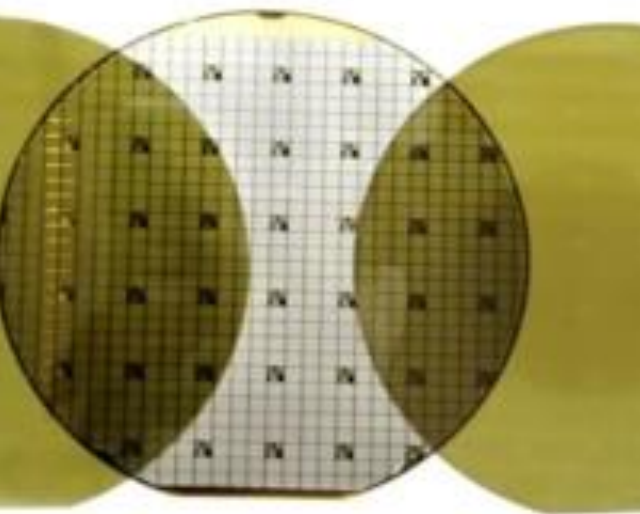


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Nature Diamond  
Synthetic Diamond



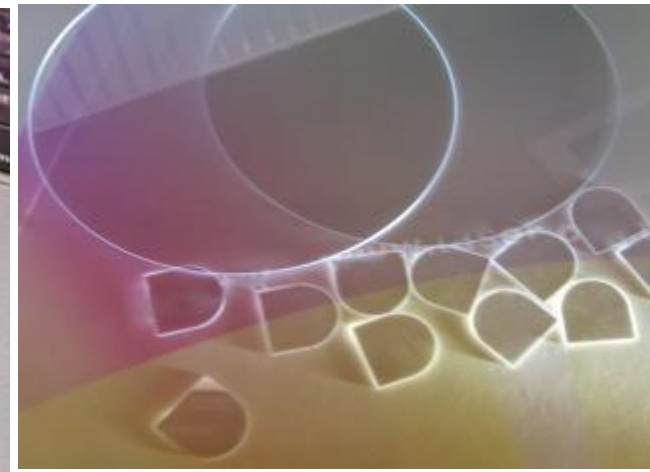
## Laser cutting of super hard materials



3<sup>rd</sup> Gen Semi wafer (SiC)



Sintered SiC parts

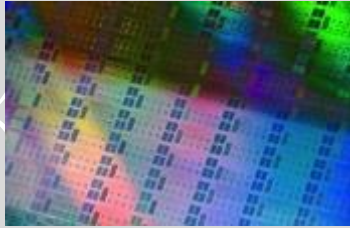


Sapphire



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# Markets and Applications



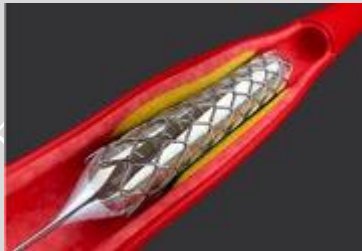
**Semi:**

- Glass interposer for 3D IC WLP.
- TGV and glass substrates
- Micro structured glass wafers
- Micro joining of optical grade wafers



**Mech :**

- Micro mold and components
- Micro mechanical parts
- Micro pump, valve parts
- Micro filter, fine metal masks



**Medi:**

- Heart stent, pacemaker
- Disposable endoscope
- Micro surgical knife
- Micro fluidics
- Micro Nebulizer



# Markets and Applications



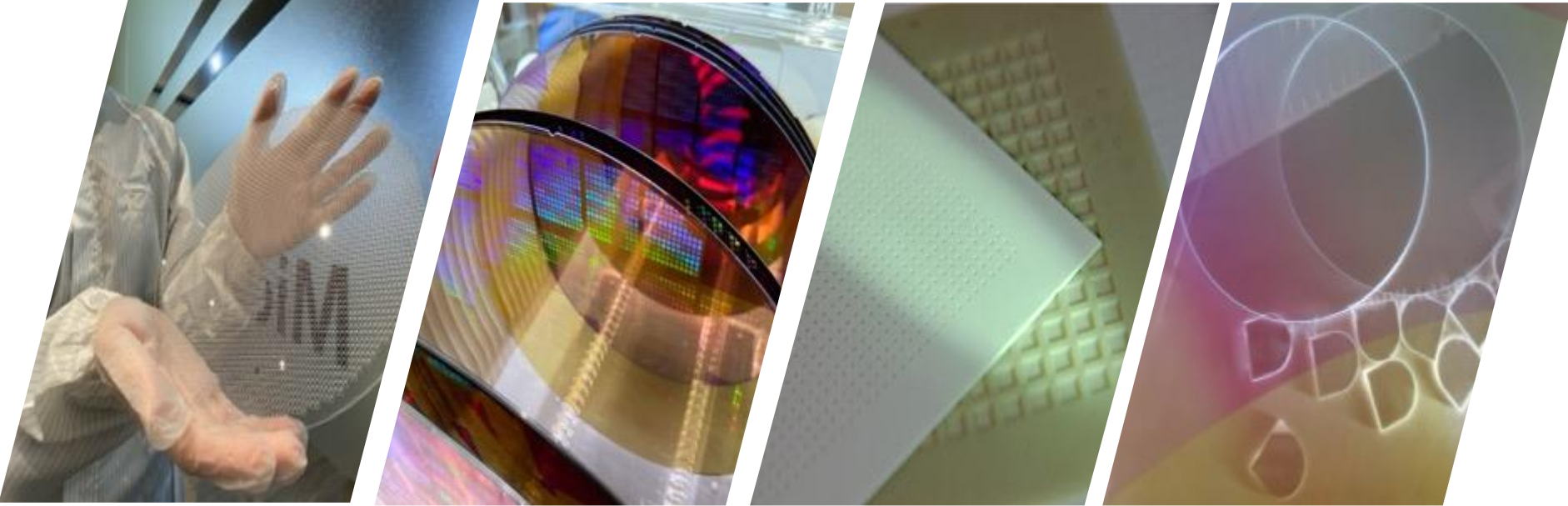
Optical : Micro optical engine  
Micro gratings  
Micro lens array  
Lenses for micro projection  
Optical components for AR



FPD : 3D curved cover glass  
Head-Up Display optical parts  
Processing of ultrathin glass  
3D curved dashboard and mirror for future car  
Foldable and wearable display

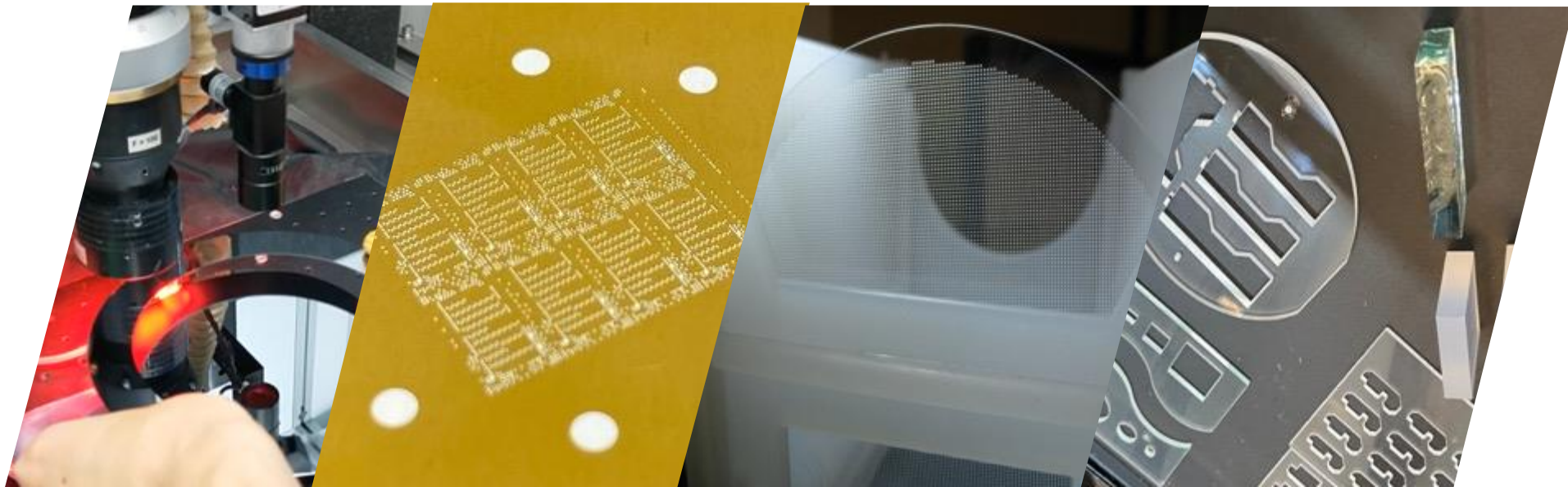


Biometric: Fingerprint sensor  
Iris recognizing sensors  
Facial recognizing sensors  
Voice recognizing sensors  
Signature recognizing sensors



## Job shop Services

Hi-Nano streamlines the path from R&D to Mass Production, specializing in innovative materials and products, reducing time-to-market.

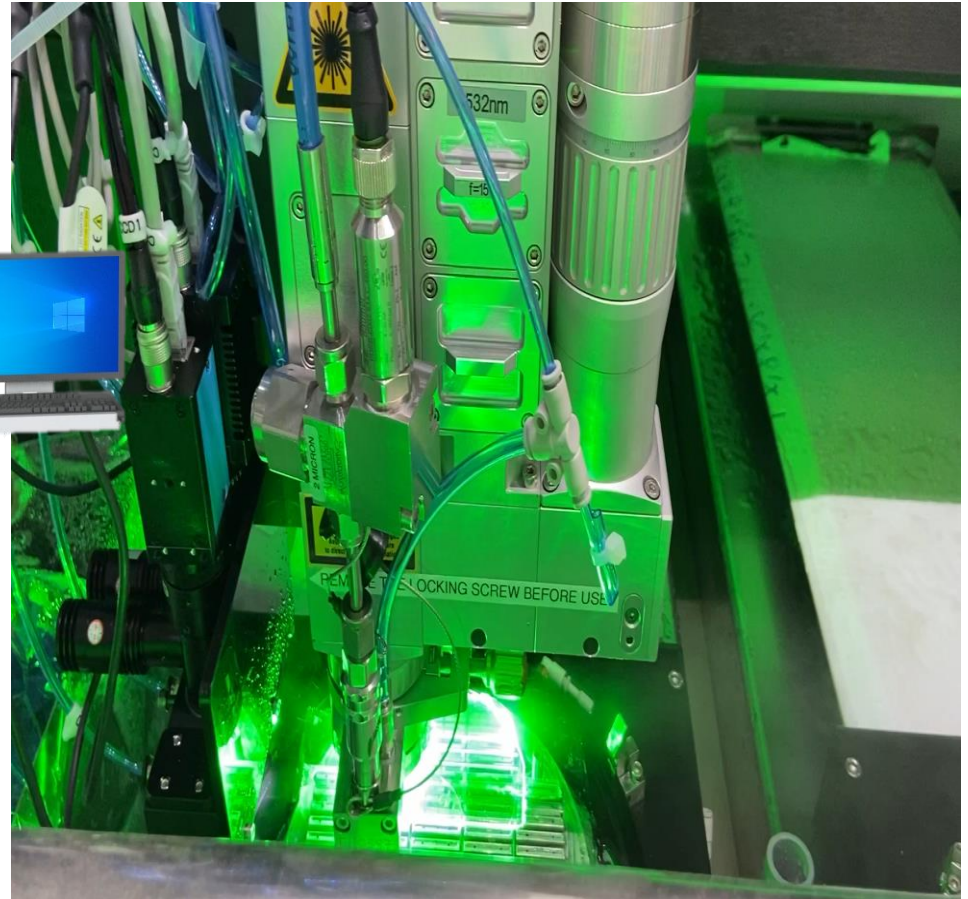


# Field-Proven Customized Laser Systems



Hi-Nano Optoelectronics Co., Ltd.

# Modified Laser Fusion Cutting System



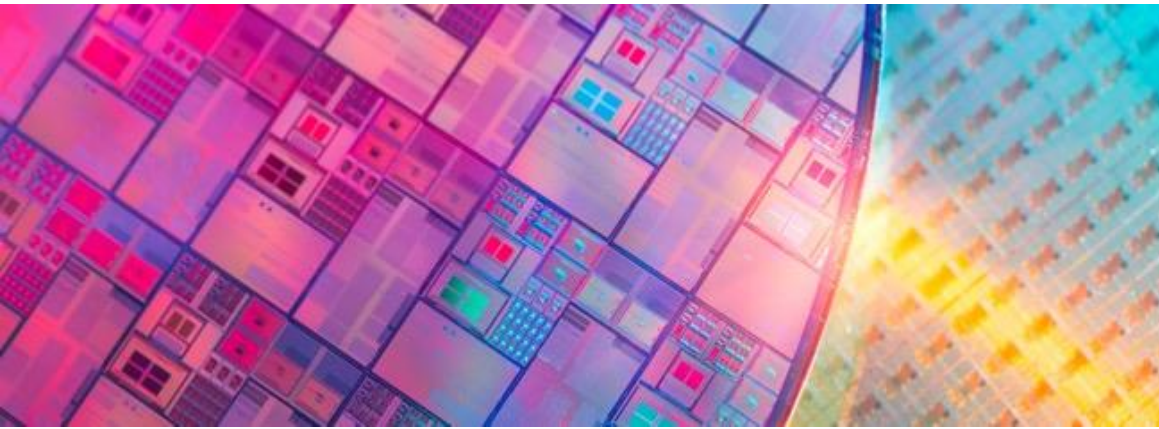
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# Turn-key Solutions for Laser Micromachining

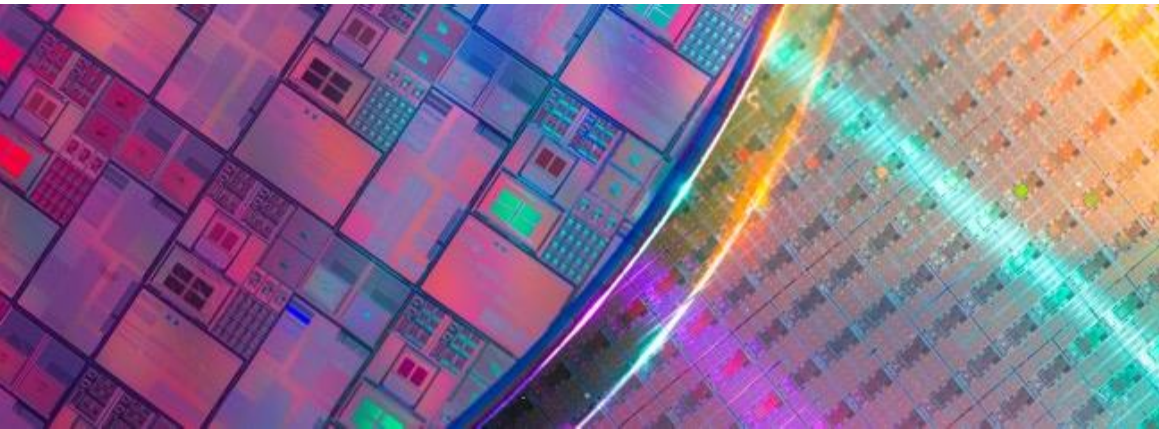
Hi-Nano has amassed a wealth of expertise in innovative laser micromachining, empowering our customers to excel in the competitive world of micron and nanoscale precision.



Hi-Nano Optoelectronics Co., Ltd.



*Empowering Innovation with our Services*



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0939 988 036

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