

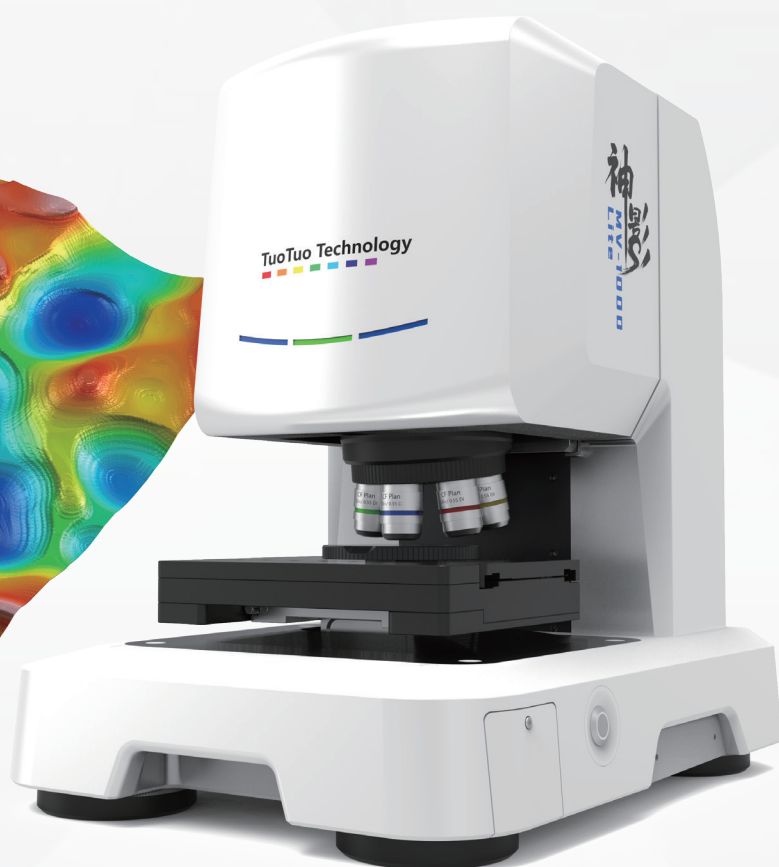
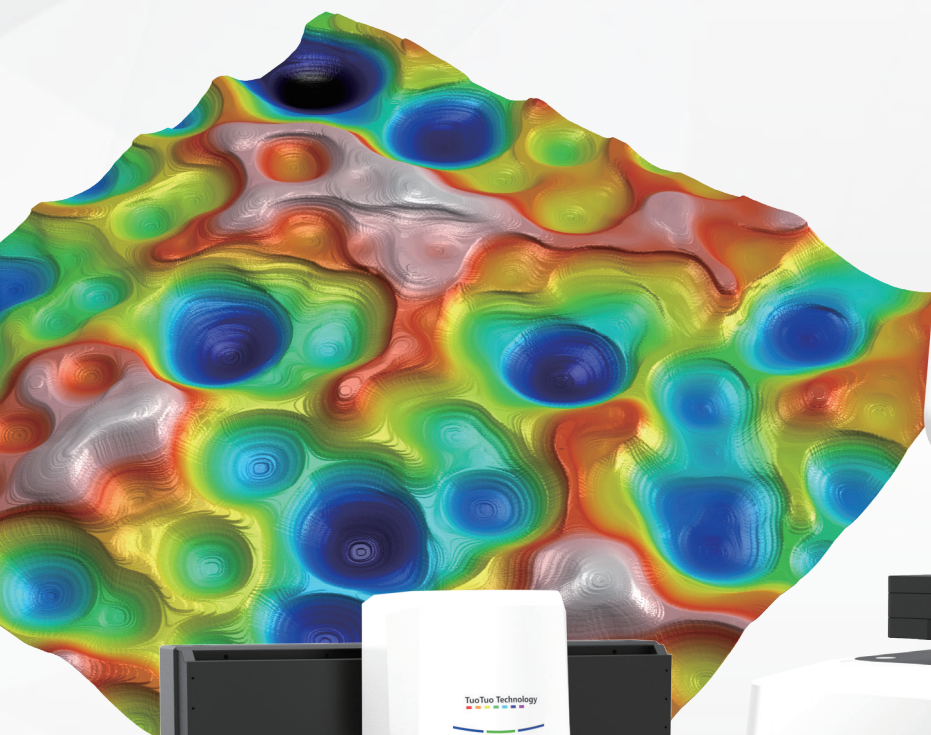
TuoTuo Technology



ARALYSE
ANALYTICAL INSTRUMENTS

3D Microscope

**White light interference / Depth of field fusion / Confocal
3 in 1 measurement**

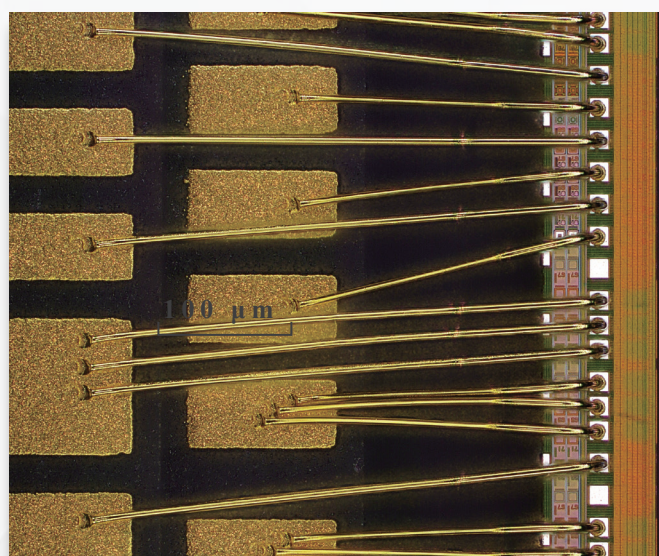
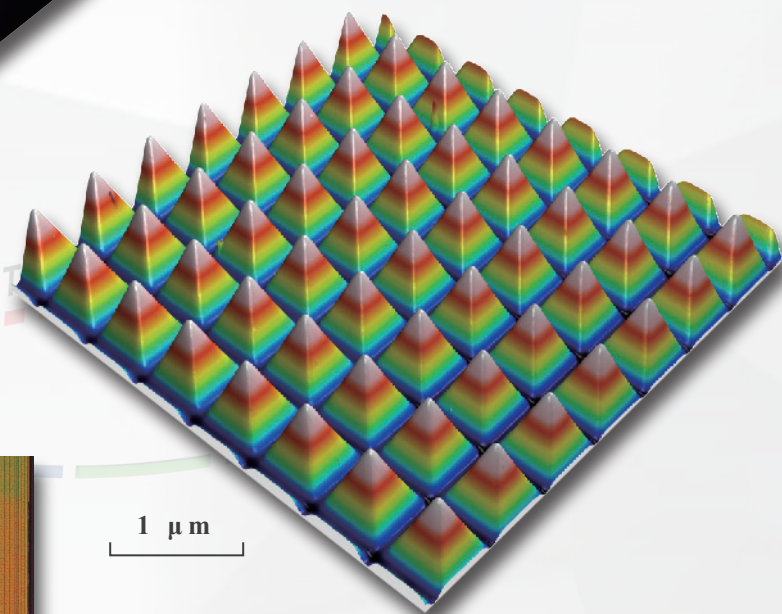
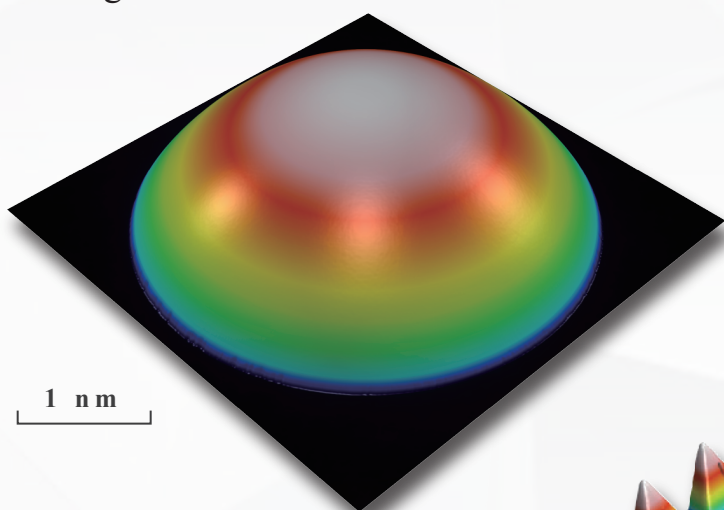


Miracle Vision
MV-1000 / MV-7000 Series

Nanometer → Millimeter

— Surface morphology analysis —

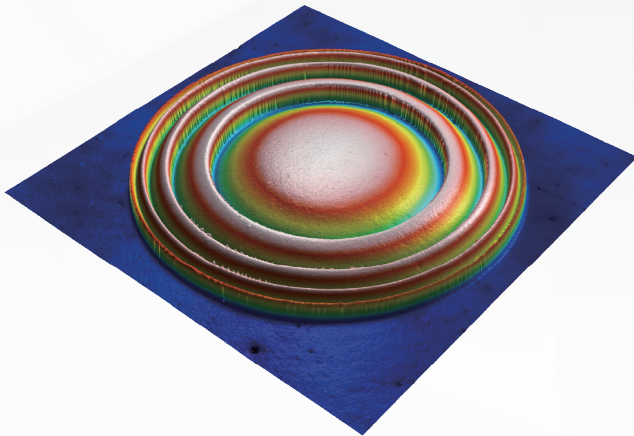
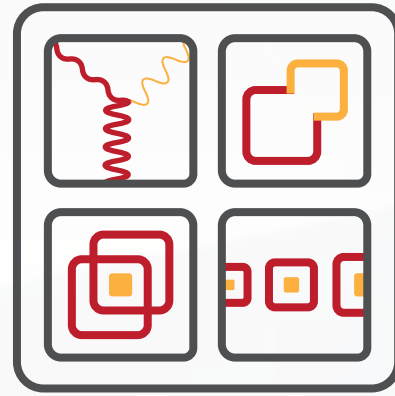
The MV-1000 / MV-7000 series 3D microscope combined with high-precision scanning and high-precision algorithms can achieve surface topography analysis from nanometer to millimeter scale, including roughness, steps, surface profile, curvature and other parameters. It has been widely used in semiconductors, optical materials, biochips, metal surfaces, precision machining and other industries because of its non-contact (non-destructive testing), no requirement for sample surface rigidity, high precision and fast scanning.



1 mm

Multimode:

Four different measurement modes—brightfield observation, white light interferometry, confocal microscopy, and depth of field fusion—are integrated into a single microscope to meet measurement needs in various scenarios.

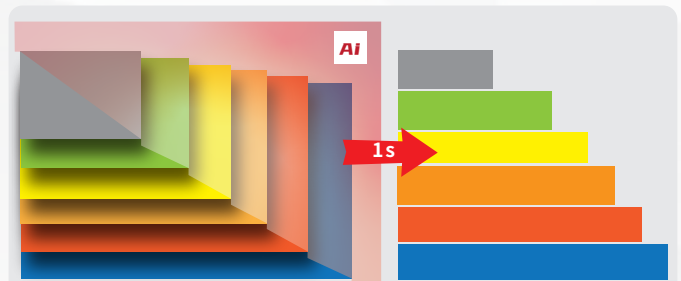


High precision:

Analysis results can be achieved with sub-nanometer to nanometer precision in different measurement modes.

High speed:

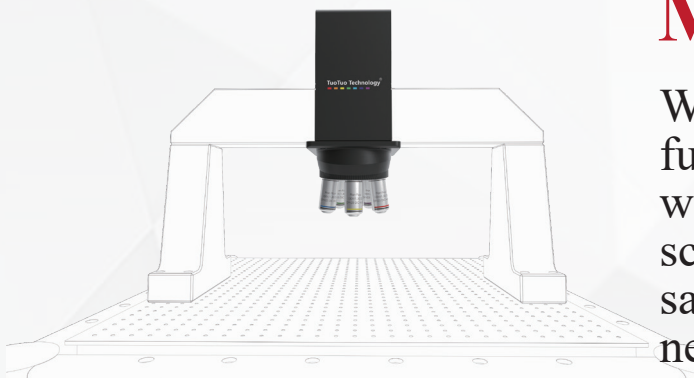
The unique AI algorithm analyzes the pattern to achieve 'no delay' result output and experience 'One-Click' result measurement.

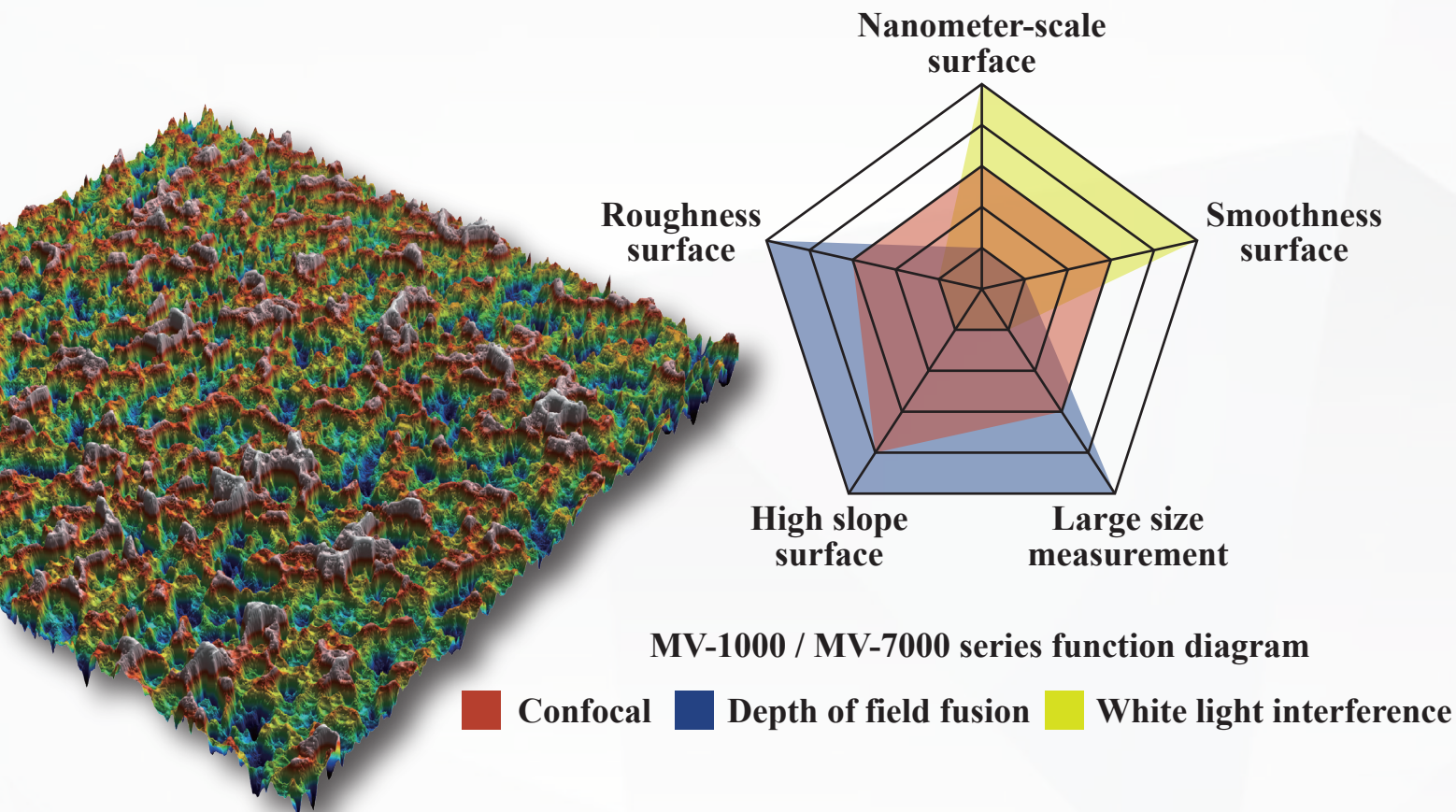


Even with the fusion of multiple images, it is possible to produce images "in 1s."

Modularization:

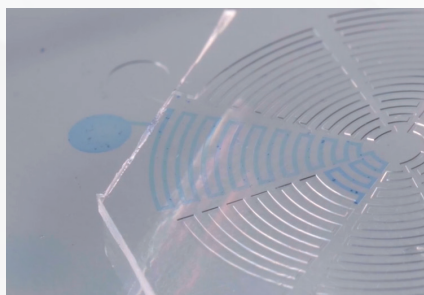
We provide "modular" customized functional products to meet the workflow tasks of various specific scenarios whether it's special sample requirements or functional needs.



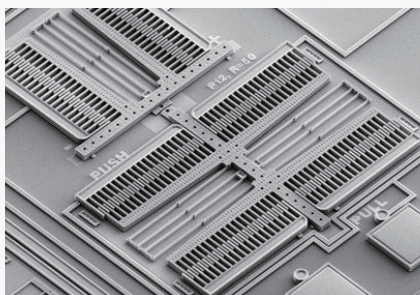


Industry applications

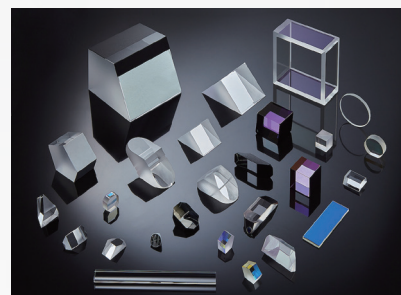
The MV-1000 / MV-7000 series Miracle Vision 3D microscope , with its excellent optical detection technology, meets the stringent requirements of different industries and application scenarios. Whether it 's biochip, semiconductor, optical material detection, we offer customized observation and measurement solutions to suit your specific needs.



Biochip



Semiconductor

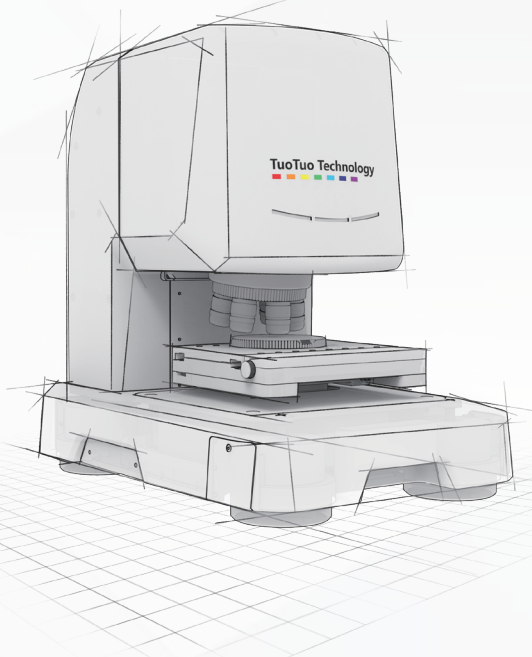


Optical material

Turnkey resolution: one-click precision

■ MV-1000/MV-7000 series microscopes

The MV-1000/MV-7000 series microscopes, with outstanding performance and technological innovation, have become essential tools in scientific research, healthcare, and industrial fields. This series not only features advanced 3D imaging technology but also incorporates multiple innovative features, providing users a comprehensive observation experience.



■ A unified design philosophy: Merging precision and convenience

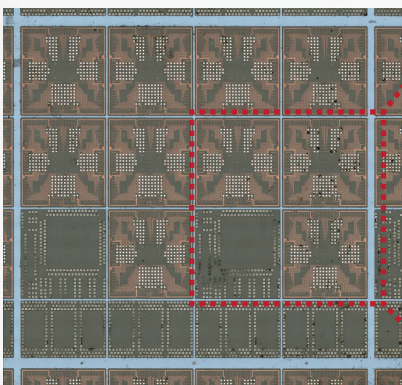
The MV-1000/MV-7000 series features a revolutionary integrated design that combines the optical system and sensors into a single housing. This compact design not only improves user-friendliness but also greatly increases system stability, ensuring dependable performance under all operating conditions.

[Smart imaging, One-Click precision] With automated focal plane positioning and intelligent leveling, our system ensures accurate targeting, eliminates tilt errors, and secures operation at the push of a button.

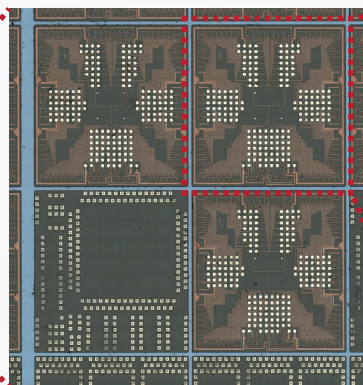
■ High precision and wide field of view: striving for observational excellence

*** Up to 20-billion-pixel stitched panoramas with map-style navigation for fast inspection.**

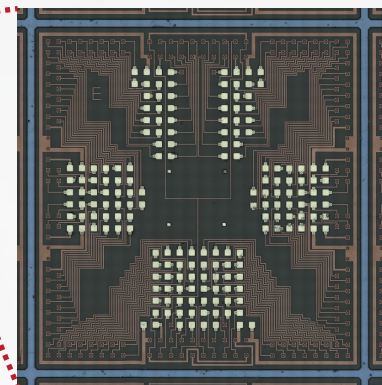
Using advanced optical technology, the MV-1000/MV-7000 microscope series provides ultra-high-definition images even in tiny specimens. Its unique optical design provides higher magnification and a broader field of view, allowing you to explore an exceptional clarity and depth of the microscopy world.



Navigation map



Magnified view

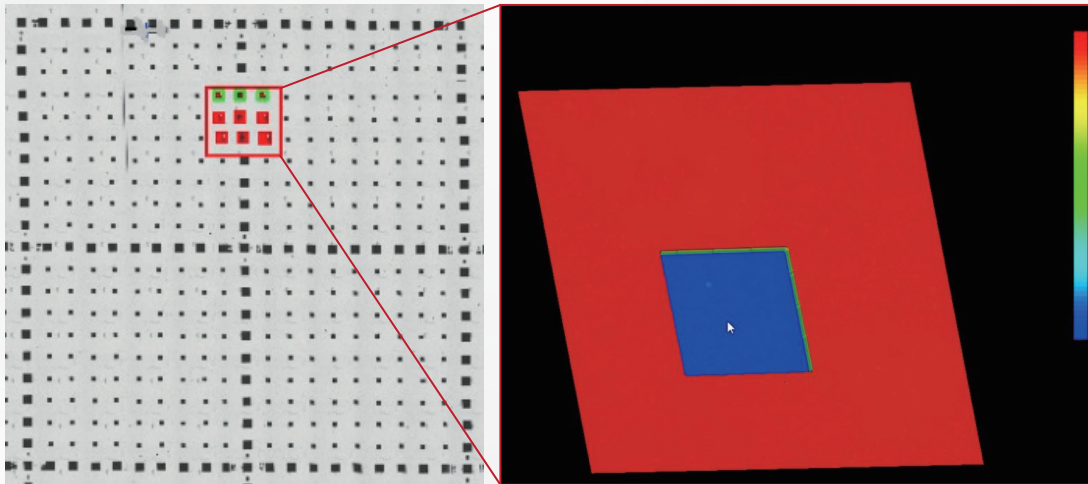


Detail view

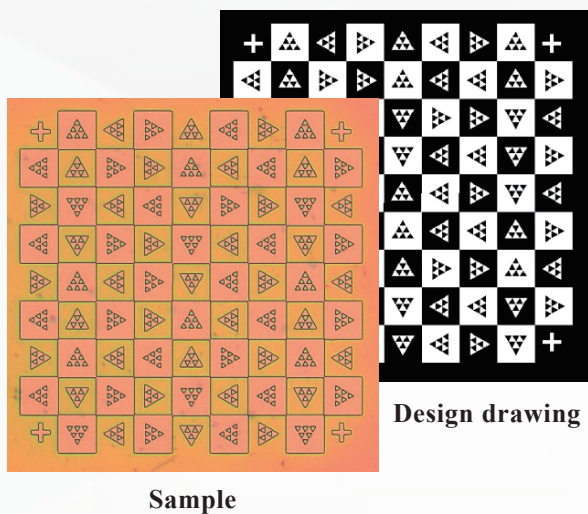
■ Intelligent functions — real-time capture & adaptive measurement

MV-1000/MV-7000 serious microscopes, beyond automatic recognition/measurement of common geometric features, the software learns and adapts:

- Built-in machine-learning lets users train the system to recognize specific shapes (e.g., round holes, squares).
- The system then identifies and measures size/position more accurately, increasing efficiency and reducing human error—ideal for complex sample analysis.



Item	Area No.	Position	Height	Result
1	0	0	190.5498	OK
2	0	1	197.6179	OK
3	0	2	196.8339	OK

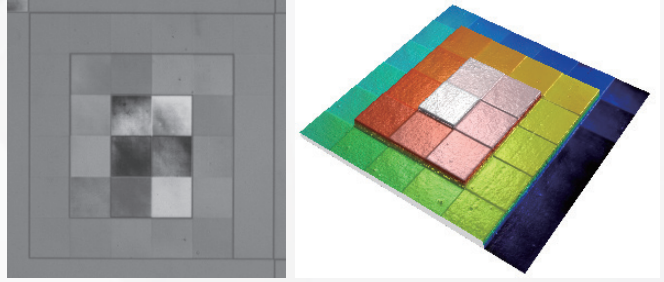


■ Product location via design overlay

An advanced positioning system enables rapid alignment and inspection of complex, large-area patterns by importing CAD or design drawings; this is especially beneficial for research and semiconductor inspections.

■ 2D measurement and 3D reconstruction: multi-dimensional accuracy

The built-in 2D measurement features enable researchers to precisely quantify the geometric parameters of samples, while 3D reconstruction technology accurately reproduces their true three-dimensional shape. These capabilities not only improve observational depth but also provide dependable data support for analysis and reporting.

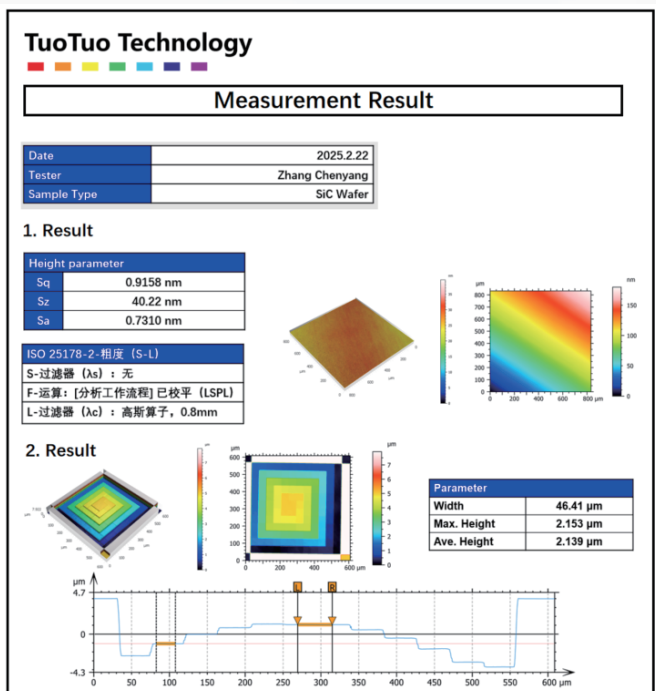
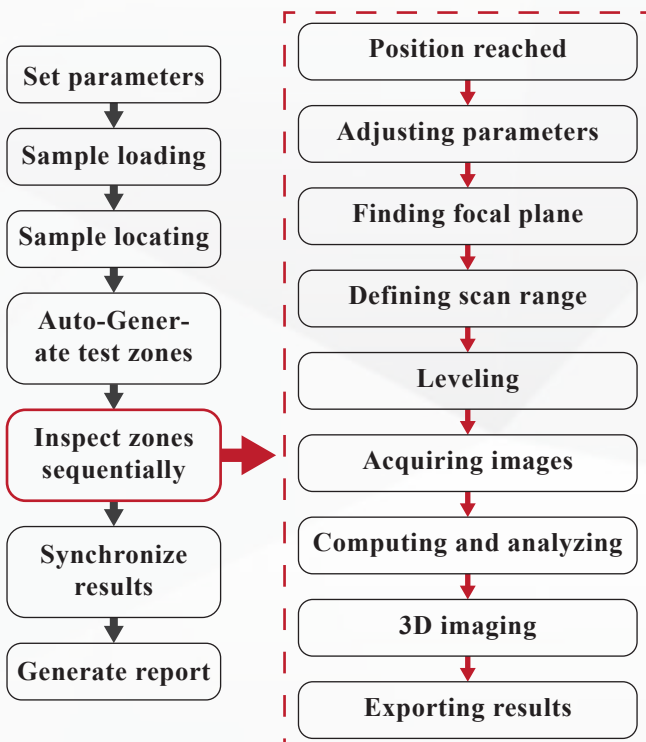


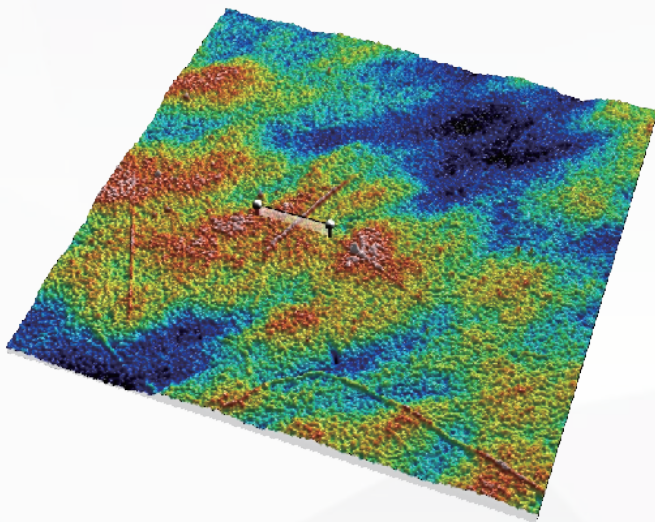
■ Custom workflows & report generation

Users can customize workflows for data acquisition, analysis, and report creation to meet specific industry or project needs. After completing data collection, the system automatically generates inspection reports based on predefined templates or parameters. Users have the ability to adjust report content, format, and output options (e.g., PDF, Word), ensuring efficient and precise information delivery.

Parameter	
Width	46.41 μm
Max. Height	2.153 μm
Ave. Height	2.139 μm

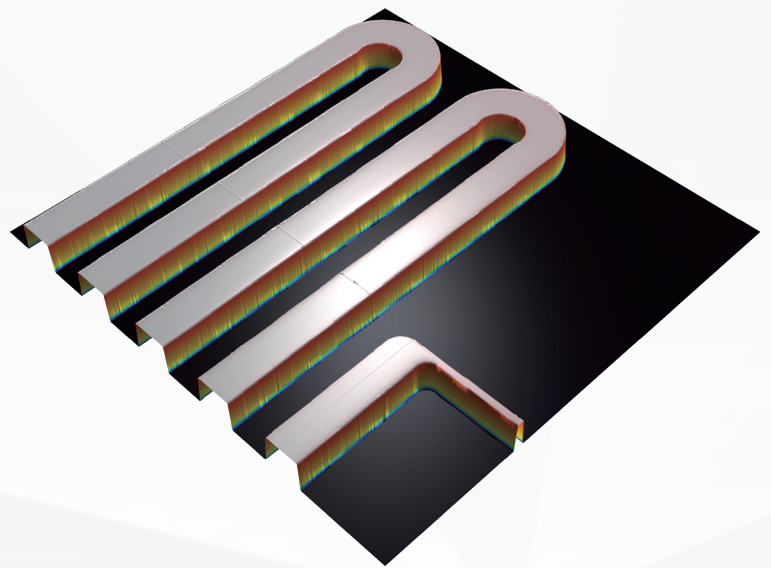
Height Parameter	
Sq	0.9158 nm
Sz	40.22 nm
Sa	0.7310 nm



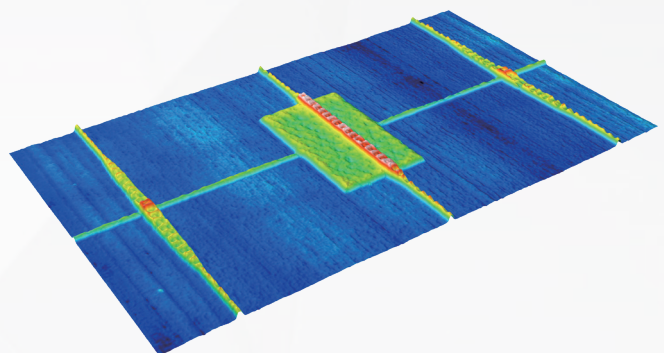
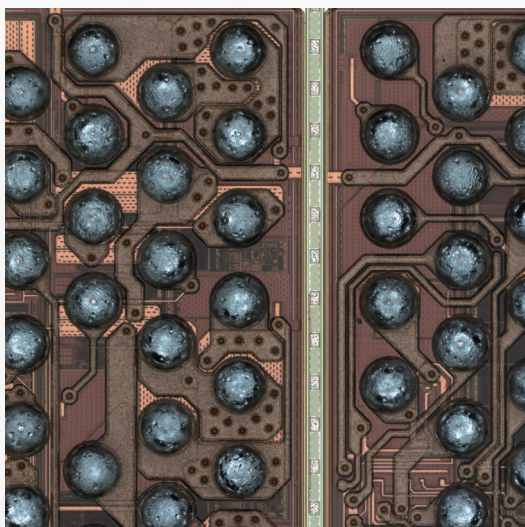


In the field of **optical materials**, precision detection technology can help improve the quality and performance of optical lenses. Surface roughness, surface shape and other parameters are important factors affecting the quality control and performance of optical lenses.

In the field of **life science**, the surface roughness of the microfluidic chip or its mother plate, the height and width of the microfluidic channel are detected to accurately control the reaction efficiency of the microfluidic chip, the degree of reagent mixing, and the liquid flow rate.



In the **3C electronic products** and **precision machining industry**, the machining scratches and roughness of products can be measured quickly and accurately.



List of objective lens:

Objective Type	Interference Objective			
Magnification Ratio	5×	10×	20×	50×
Numerical Aperture	0.15	0.3	0.4	0.55
Working Distance(mm)	9.2	7.4	4.6	3.4
Resolution(μm)	1.83	0.92	0.69	0.50

Objective Type	Observation Objective					Long Working Distance Observation Objective		
Magnification Ratio	5×	10×	20×	50×	100×	20×	50×	100×
Numerical Aperture	0.15	0.3	0.45	0.8	0.9	0.4	0.5	0.8
Working Distance(mm)	20	11	3	1	1	12	10.4	3.1
Resolution(μm)	1.80	0.90	0.60	0.34	0.31	0.70	0.55	0.34

System specification:

Measurement Types	White light interference / Depth of field fusion / Confocal
Observation Types	Images (2D/3D), Morphology, Dimensions, Roughness, Thickness, etc.
Light Source	White Light LED, Spectral Range: 420-700 nm
Nosepiece	6-Position @ fully motorized; Repeat Positioning Accuracy: 0.001 °
Camera	1936 × 1464 (132.2 fps)
Z Stage Travel / Scanning range	Moving distance: 100 mm; Scanning range: 10 mm
Roughness RMS Repeatability	0.008 nm
Step Repeatability	0.1 % (10 μm)
XY Stage Range	100 mm × 100 mm @ fully motorized
Tip-tilt Stage	±3° pitch adjustment @ fully motorized
Weight	75 kg
Dimensions	516 mm × 430 mm × 550 mm
Environmental Requirements	Recommended ambient temperature 23°C, humidity 20% - 50%

Accessories option

Vibration Isolation Table:

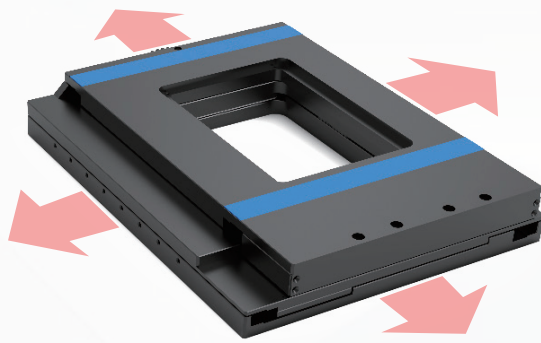
Equipped with an air-floating vibration isolation platform to achieve isolation and damping of vibrations, which can significantly reduce the impact of vibrations on testing. Whether it's special sample requirements or functional needs, we can provide "modular" customized functional products to meet various specific scenario applications.



TTT-STG-750

Motorized Translation Stage:

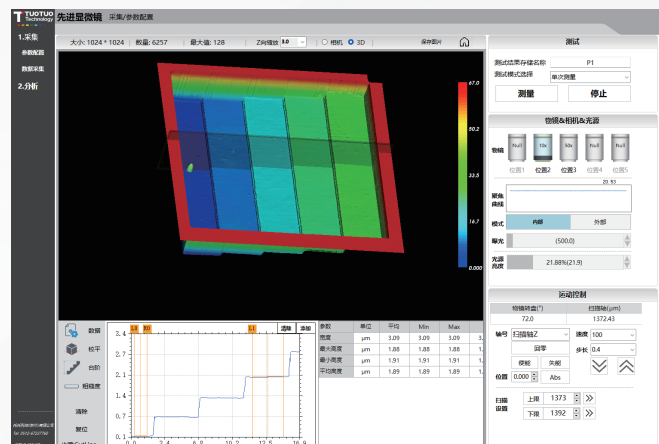
The Motorized translation stage with a high-precision grating scale in a fully closed loop can ensure a repeat positioning accuracy of $0.25\mu\text{m}$, and the grating scale resolution can reach up to 50nm . It provides the utmost convenience in large-range image stitching and image positioning navigation modes. Standard motorized stage travel range: $110\text{mm} \times 75\text{mm}$. If you have special requirements for the sample stage, please contact us.

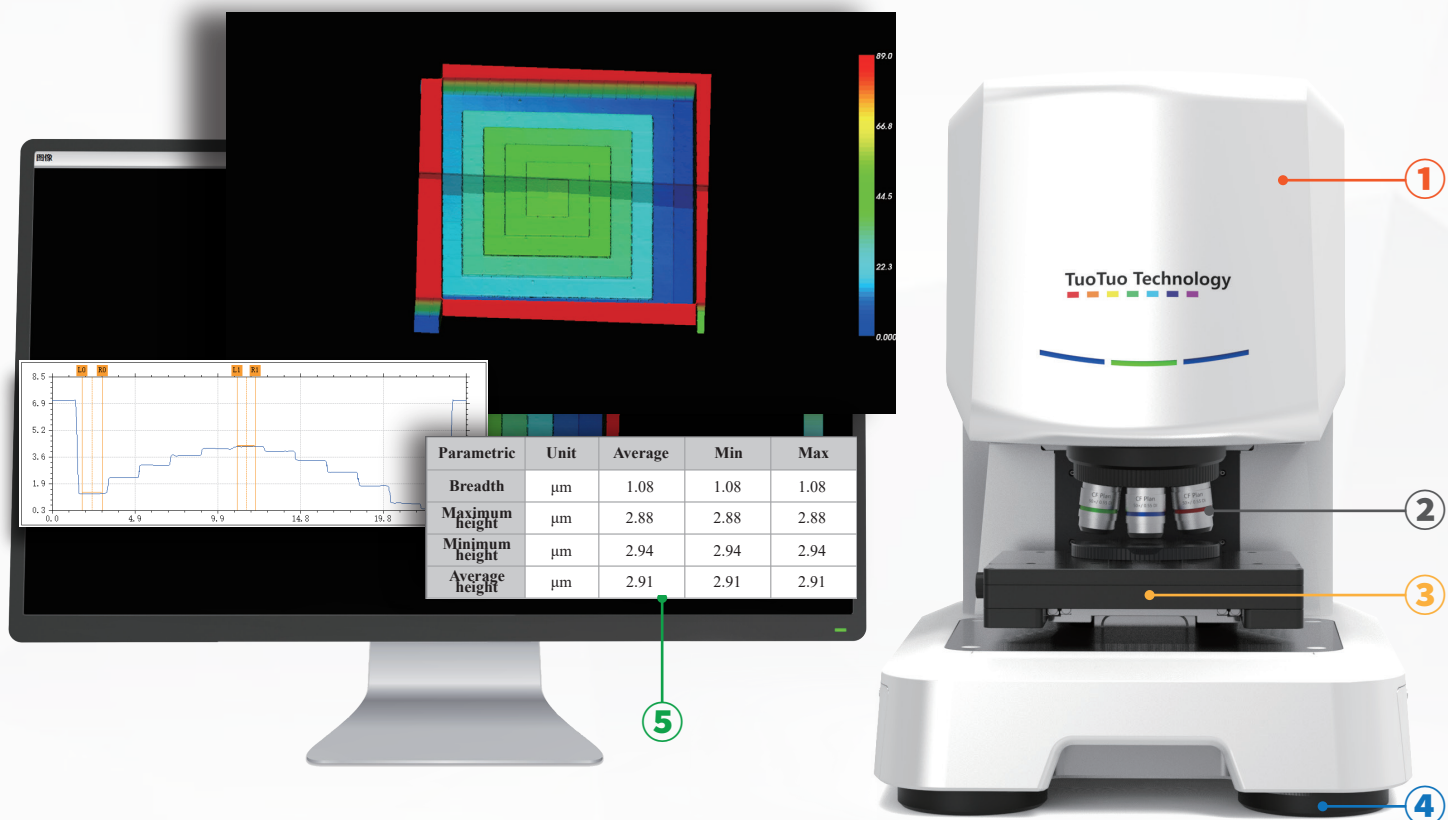


TTT-Power-075-P01

3D Analysis Software

TTT-MV-Inspector is a proprietary 3D surface topography analysis software that is highly integrated with measurement software, enabling real-time, high-quality data visualization output. It features basic data preprocessing functions and analytical tools, with a simple and intuitive interactive interface, ensuring rapid and efficient operation.





①

- **3D Advanced Microscope**
MV-1000 / MV-7000

②

- **Objective (Required)**
Interference Objective / Observation Objective

③

- **Motorized Translation Stage (Option)**
Model: TTT-Power-075-P01
Upgrade the manual translation stage to a high-precision motorized translation stage.

④

- **Vibration Isolation Table (Option)**
Model: TTT-STG-750
Vibration isolation platform, to reduce the impact of environmental vibrations on the stability of test results.

⑤

- **3D Analysis Software**
TTT-MV-Inspector (Option) is a fundamental 3D microscopic analysis software for the Miracle Vision microscope series, offering basic leveling, 3D contour, step height, and roughness analysis functions.
Imaging Topography: Mountains is a professional analysis software for surface topography and 3D imaging.

TuoTuo Technology



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Youtube

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