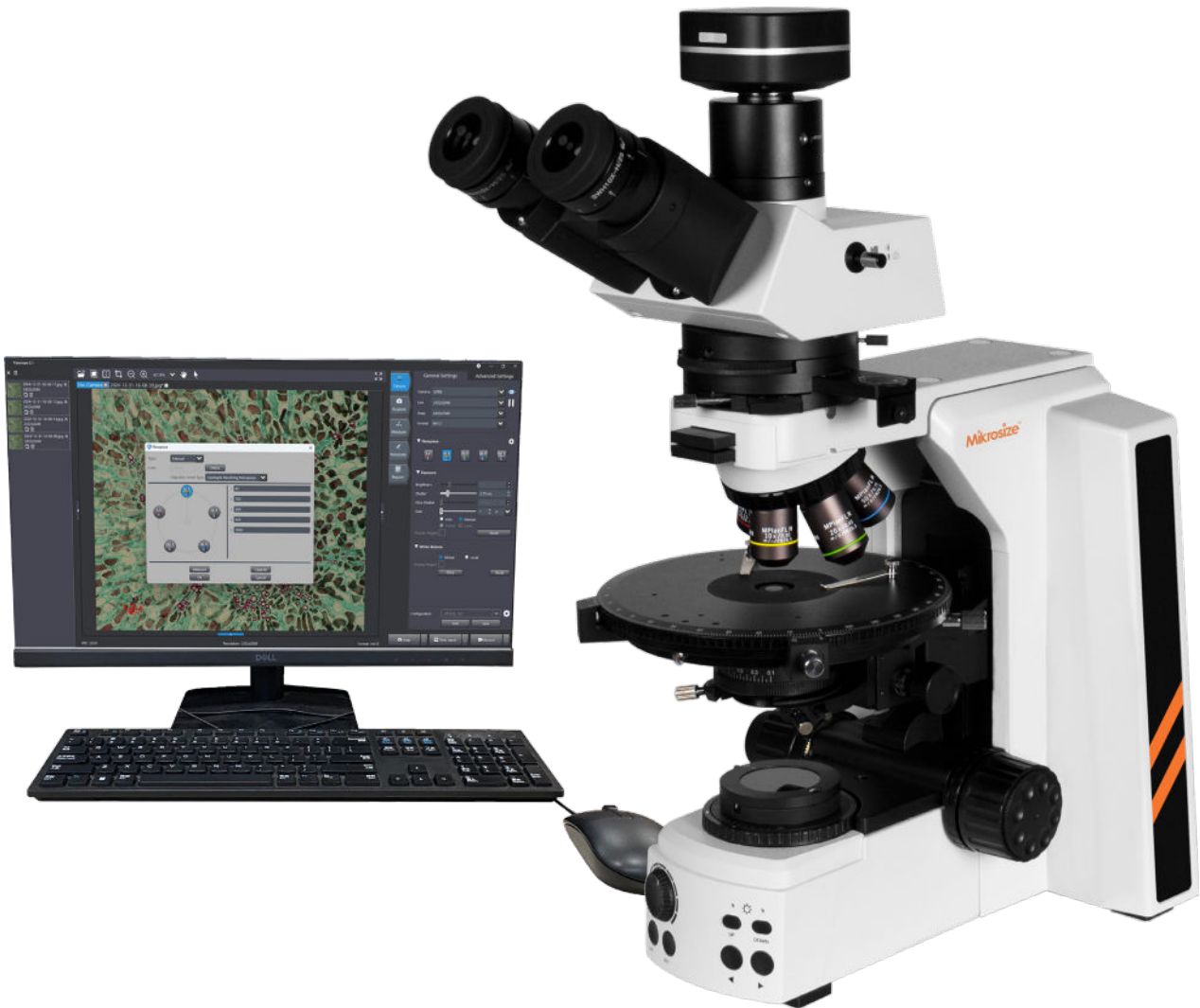


# iPLM-530 Polarizing Microscope



## Contact us

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## Feature and Application

The iPLM-530 is a research-grade polarizing microscope equipped with an infinity-corrected optical system, a trinocular observation tube, and 10× ultra-wide-field eyepieces. It adopts 4 strain-free plan semi-apochromat objectives and a 5-hole coded nosepiece. Both transmission and reflection use 10W 4500K high-CRI LED light sources with intelligent light intensity management. The instrument features 360° rotatable analyzer/polarizer, coaxial coarse/fine focusing, and a 360° rotatable stage, supporting conoscopic observation and a full set of optical compensators to meet high-precision polarizing observation requirements for scientific research.

### Product Feature

- Infinity-corrected optical system with 4 strain-free plan semi-apochromat objectives delivers clear, flat imaging for high-precision research-grade polarizing observation.
- Transmission and reflection both use 10w 4500k broadband led sources ( $\text{cri} \geq 95$ ), providing uniform, stable lighting and significantly improving color reproduction.
- Intelligent light intensity management automatically adjusts to optimal brightness when switching objective magnifications, simplifying operation and enhancing efficiency.
- Trinocular tube with high-eye-point 10× wide-field eyepieces (adjustable interpupillary distance and diopter) reduces fatigue during long-term observation.
- Coaxial coarse/fine focusing with 360° rotatable stage enables precise positioning and smooth focusing; rapid switching between orthoscopic and conoscopic observation expands application scenarios.
- Complete polarizing components and compensators with high-precision 360° rotatable polarizer/analyzer satisfy professional polarimetric analysis for minerals and materials.



## Feature and Application

### Product Application

- Observation of mineral crystal structures and identification of mineral species for geological research and ore analysis.
- Orientation analysis of polymer materials and characterization of internal morphology for material property research.
- Stress testing of glass and transparent ceramics, rapid defect detection for optical component quality control.
- Polymorph analysis of pharmaceuticals for drug R&D and quality control.
- Polarizing observation of liquid crystal materials to visualize molecular alignment for optoelectronic material development.
- Microscopic analysis of geological thin sections and biological fossils for scientific research, education, and sample identification.



## Product Details



**1. Eyepiece**

**2. Trinocular Observation Tube**

**3. Camera**

**4. Adapter**

**5. Nosepiece**

**6. Objective lens**

**7. Stage**

**8. Light Source Control Knob Button**

**9. Objective Lens Switching Button**

**10. Coarse-Fine Coaxial Focusing Knob**

**11. Swing-out Condenser**

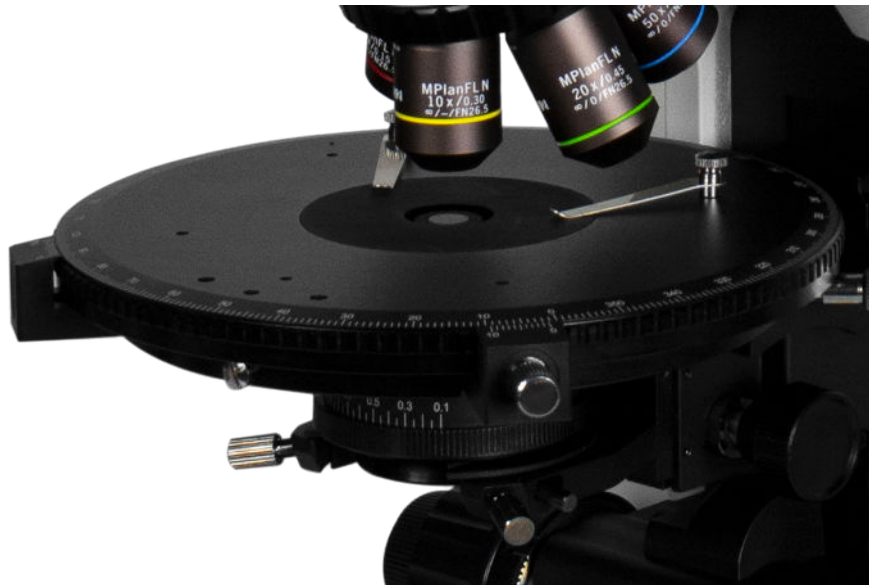
**12. Analyzer**

**13.  $\lambda$ -Plate**

**14. Polarizer**

## Product Details

### Product Structure



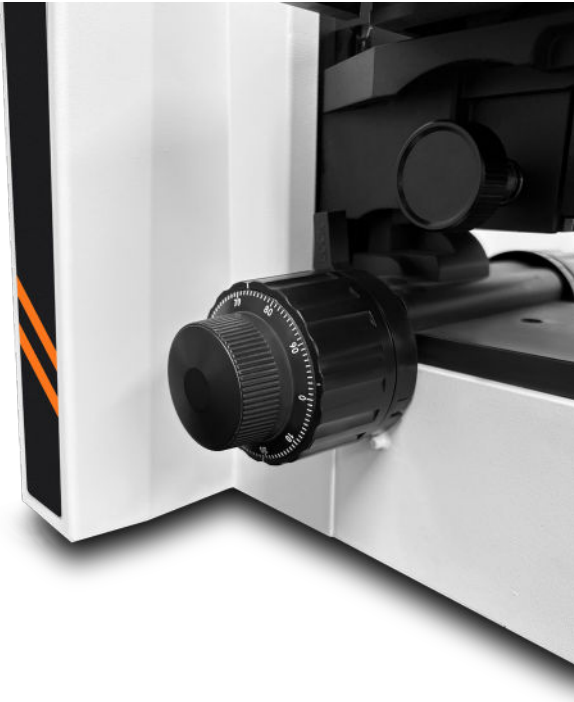
- 190 mm diameter circular rotatable Stage with 360° full-circle scale and 6' vernier for precise polarizing positioning.
- Center-adjustable, lockable, and 45° indexed rotation for stable, convenient operation.
- Large platform with robust locking prevents shifting during focusing and observation.

- Standard long-working-distance strain-free plan semi-apochromat objectives (premium in its class).
- Detachable 6-position coded nosepiece (RMS) with DIC slot; 5 positions are center-adjustable, supporting integration with image analysis software for recording illumination and objective position.



## Product Details

### Product Structure



- Coaxial coarse/fine knob with adjustable tension; fine division value: 1  $\mu\text{m}$ .
- Smooth, precise adjustment.

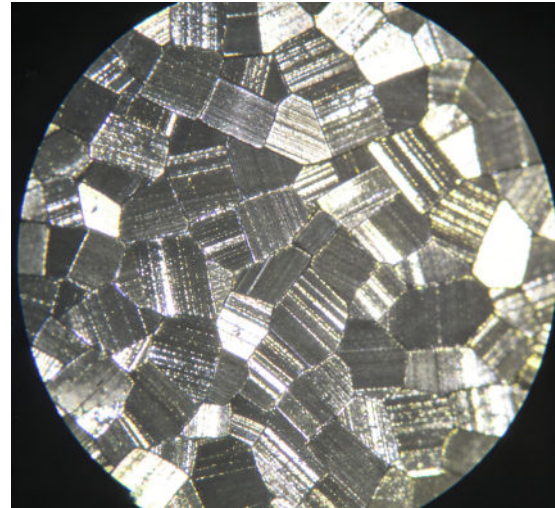
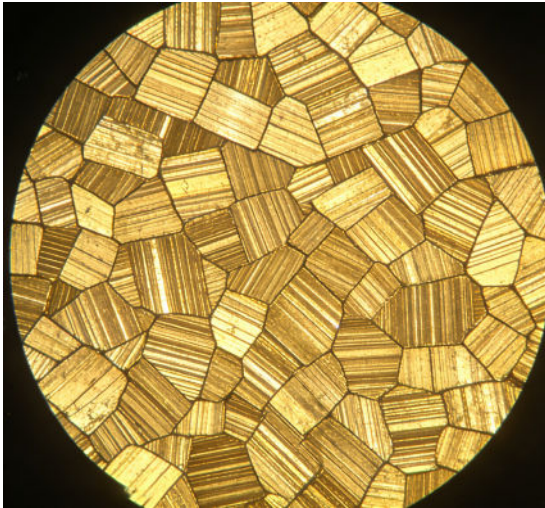
- 10W 4500K broadband LED (CRI  $\geq$  95), continuously adjustable brightness with variable iris.
- Built-in brightfield/darkfield modules; fixed polarizer, 360° rotatable polarizer, and 360° rotatable analyzer.
- True-color imaging at high and low brightness;
- Nearly heat-free, equivalent to 100W halogen lamp intensity."
- Stepless brightness adjustment; programmable brightness per objective with automatic switching.



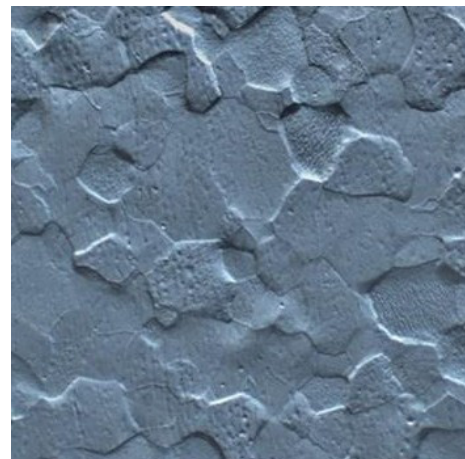
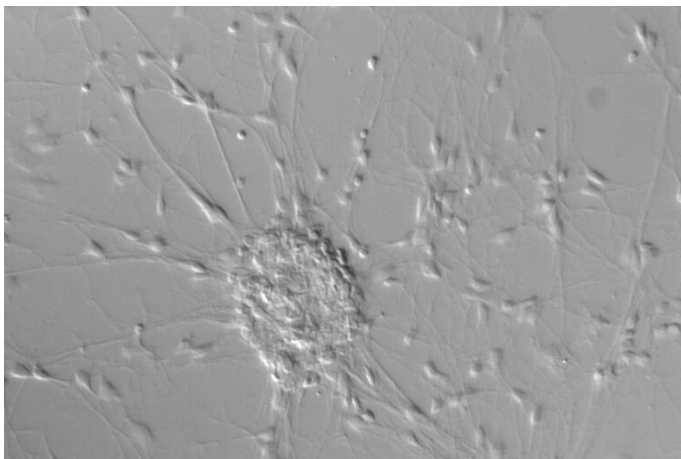
## Product Details

### Optical Path Switching

- The iPLM-530 supports optional bright-dark field, polarizing observation and differential interference contrast (DIC), which can be selected by customers according to their needs.



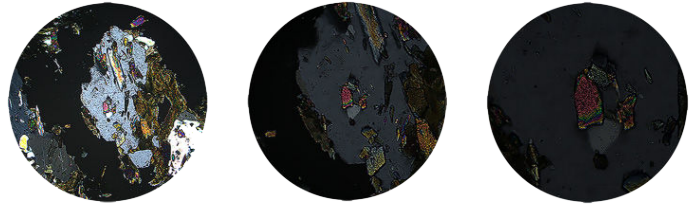
- Simultaneous bright-dark field comparison of samples: the bright field displays the overall morphology, while the dark field highlights defects, particles and transparent edges with stronger contrast for easier flaw detection.



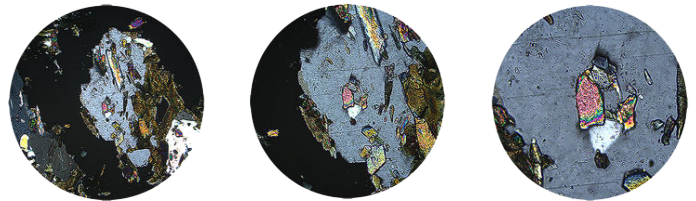
- DIC observation delivers a 3D embossed effect with a strong sense of depth, clear edges and no halation, ensuring more accurate details. It enables sample observation without staining, which is sample-friendly.

## Product Details

### Intelligent Light Intensity Management System

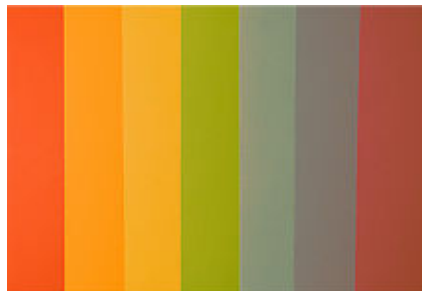
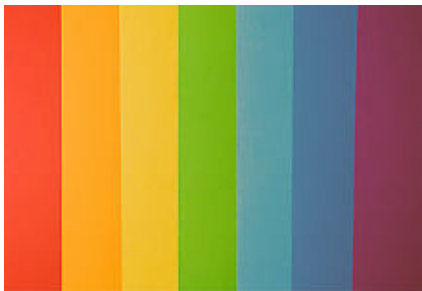


- For traditional microscopes, the image becomes darker when increasing the objective magnification.



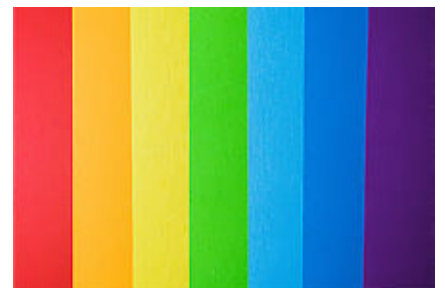
- The intelligent light intensity management system automatically adjusts the light intensity to the optimal level when changing the objective magnification.

### LED Light Source



- Halogen lamps: color rendering changes at different light intensity levels.

- LED light source: constant and consistent color rendering at different light intensity levels, with more vivid colors than halogen lamps.



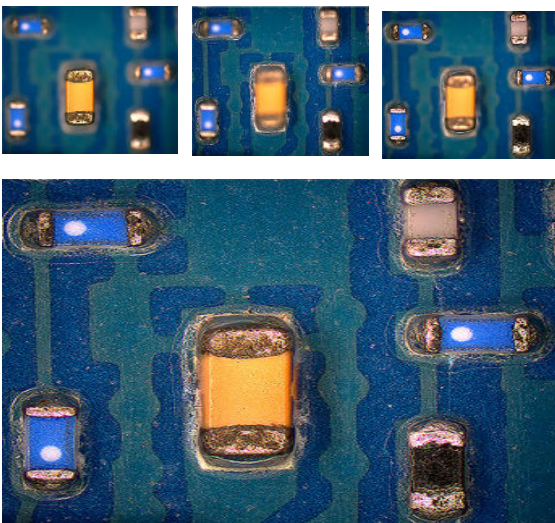
## Software (Standard Delivery)

### Software Function: Image Stitching



- The real-time image stitching function adopts image recognition technology; a panoramic image can be obtained simply by moving the stage knobs, providing a wider field of view for users.

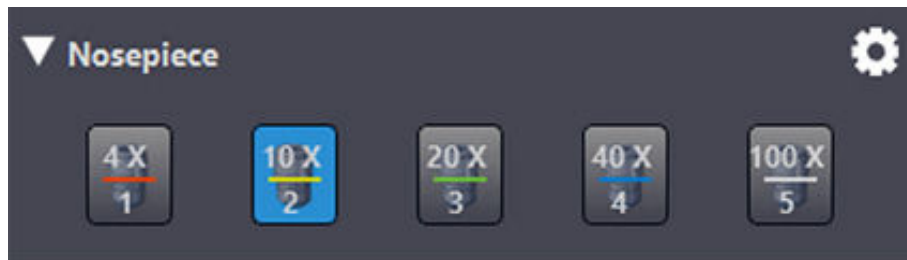
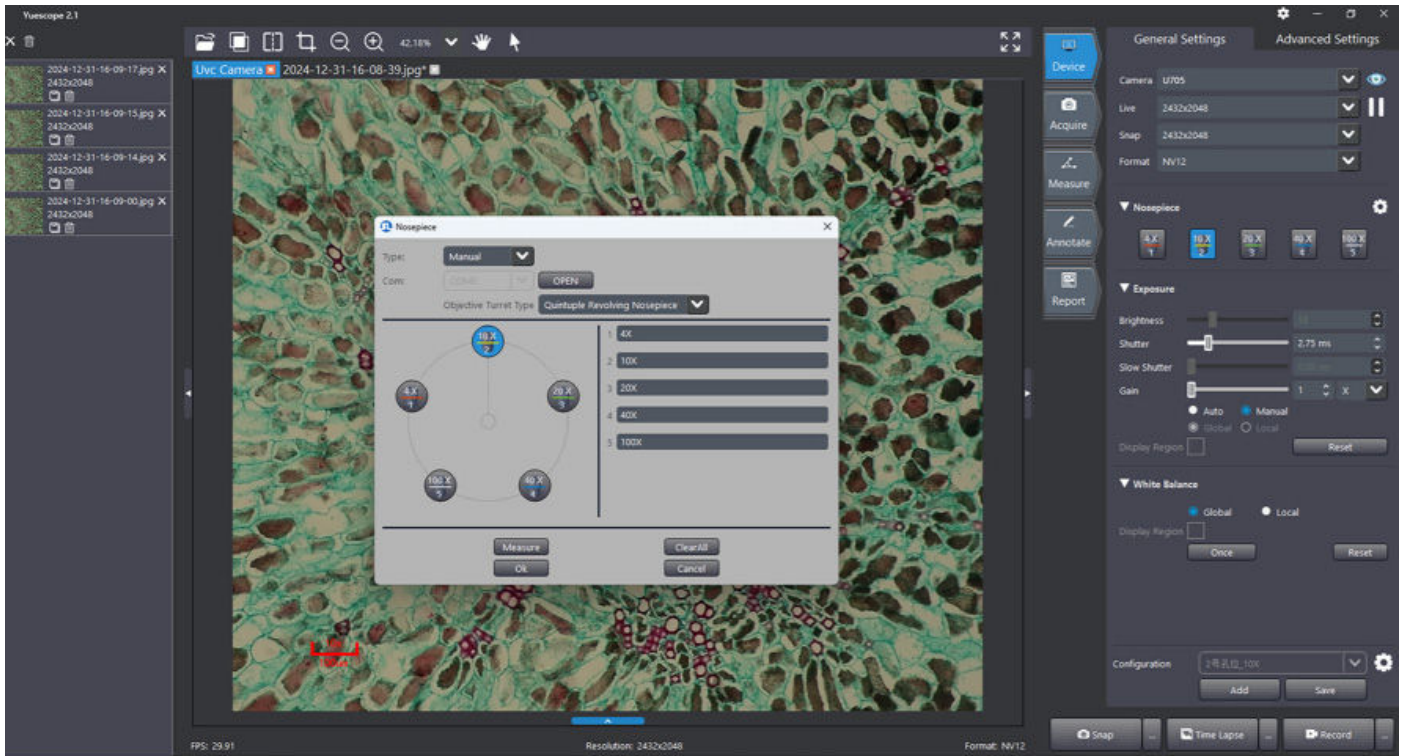
### Software Function: Depth of Field Fusion



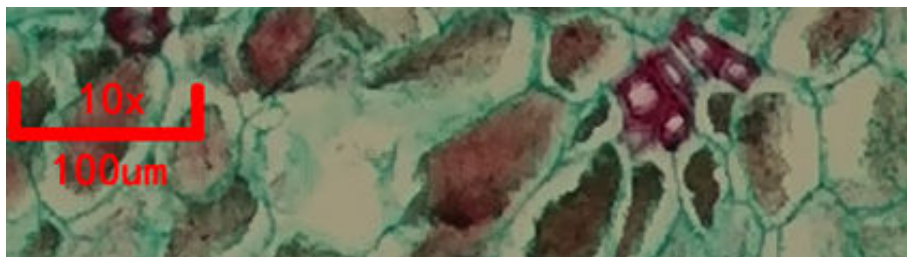
- The real-time depth of field fusion function can capture sample images with a height exceeding the objective depth of field and stack them to create an ultra-depth of field image.

## Software Operation Interface

### Software Functions



- Active objective lens recognition by software



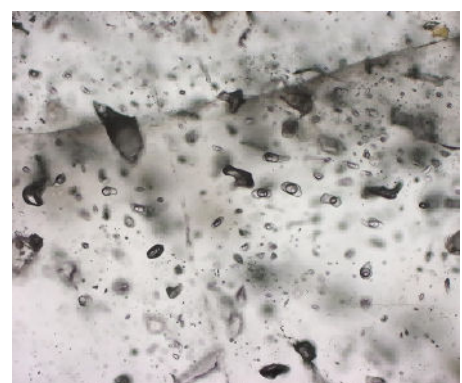
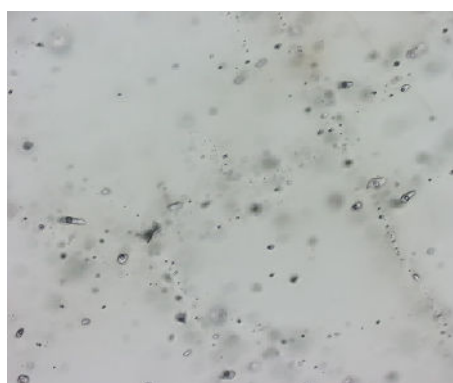
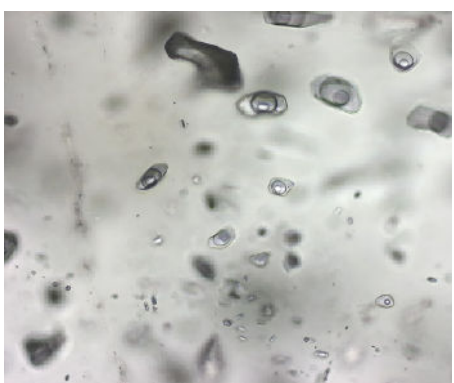
- Automatic scale bar switching by software when changing objectives

## Software Operation Interface

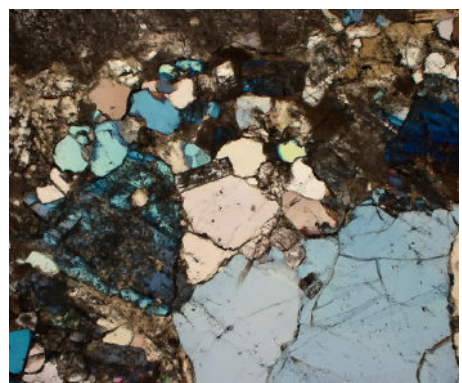
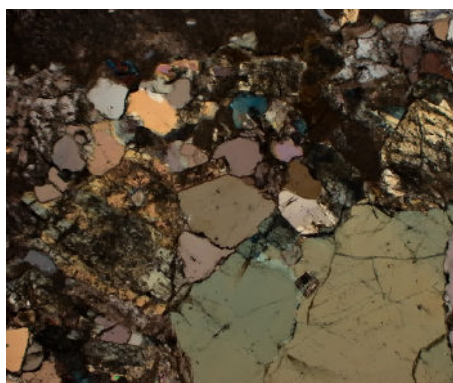
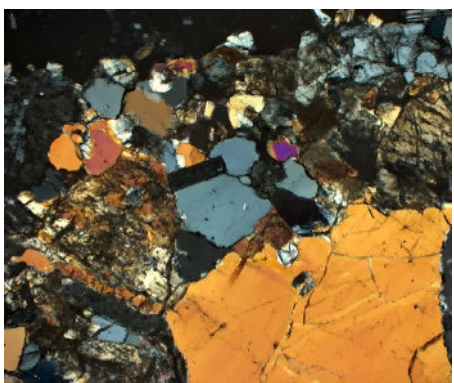
### Measurement Imaging



Crossed polar observation of rock thin sections



Observe the bubbles inside the transparent sample of glass/plastic



Crossed polar observation of rock thin sections

Plane-polarized observation of rock thin sections

Observation of rock thin sections under crossed polars with a  $\lambda$  wave plate

# Technical Specification

<b>Model</b>	iPLM-530
<b>Optical System</b>	Infinite optical system, intelligent light intensity management LED system
<b>Observation Tube</b>	Trinocular observation tube, 30° inclination; Beam-splitting ratio: Eyepiece/Camer-
<b>Eyepiece</b>	Ultra-wide field eyepiece 10X (field number $\Phi$ 23mm), high eyepoint, diopter adjustable
<b>Objective Lens</b>	Ultra-wide field eyepiece 10X (field number $\Phi$ 25mm), high eyepoint, diopter adjustable
	MPLFL5XP, NA=0.15, WD=14.8mm
	MPLFL10XP, NA=0.3, WD=8.5mm
	MPLFL20XP, NA=0.45, WD=3.5mm
<b>Eyepiece</b>	MPLFL50XP, NA=0.75, WD=3mm
<b>Polarizing Observation</b>	A 360° rotatable transmission polarizer / A fixed reflection polarizer analyzer rotatable 360°
<b>Conoscopic Observation</b>	Orthoscopic and conoscopic observation are switchable and focusable. Supplied with $\lambda$ plate, $\lambda/4$ plate, and quartz wedge plate.

# Technical Specification

<b>DIC Observation</b>	High-resolution DIC, adjustable focal length (optional) High-resolution DIC, fixed focal length (optional)
<b>Illumination</b>	LED illumination, color temperature 4500K, color rendering index (CRI) $\geq 95$
<b>Reflective Observation</b>	Kohler illumination system, switchable between transmitted and reflected illumination, LED light source with a service life of 50,000 hours.
<b>Transmitted Observation</b>	Kohler illumination system, stress-free pendulum-type condenser, NA = 1.25, suitable for objectives with magnification of 2X or higher
<b>Focusing System</b>	Coarse and fine coaxial, adjustable tightness, 1 $\mu$ m fine adjustment scale value
<b>Stage</b>	190 mm circular rotatable, 360° scale, center-adjustable, lockable; travel 47×28 mm
<b>Intelligent Management</b>	The control circuit automatically adjusts the light intensity to the optimal level when changing the objective magnification
<b>Camera</b>	20 - megapixel microscopic industrial camera
<b>Camera Interface</b>	Standard C-mount 0.5X, parfocal adjustable focus, suitable for CCD within 2/3 inch
<b>Software</b>	Basic measurement software; Microscopic analysis software (Optional)

## Standard Delivery

Name	Qty	Photo
Main Unit	1pc	
Eyepiece 10X/23mm	2pcs	
Objective (Brightfield Polarizing Plan Semi-Apochromat)	MPLFL5XP, NA=0.15, WD=14.8mm	1pc 
	MPLFL10XP, NA=0.3, WD=8.5mm	1pc 
	MPLFL20XP, NA=0.45, WD=3.5mm	1pc 
	MPLFL50XP, NA=0.75, WD=3mm	1pc 
Nosepiece	1pc	
Circular Stage	1pc	/
360° rotatable transmission polarizer	1pc	/

## Standard Delivery

Name	Qty	Photo
Fixed Reflection Polarizer	1pc	
Analyzer	1pc	
λ-Plate	1pc	/
20 - Megapixel Microscopic Industrial camera	1pc	
0.5X C-mount Camera Interface	1pc	

## Standard Delivery

Name	Qty	Photo
Instruction manual	1pc	
High-precision Micrometer (0.01mm scale value)	1pc	
Dust Cover	1pc	
Power Cord	1pc	
Camera Cable	1pc	

## Optional Delivery

<b>Eyepiece</b>	10X/25mm, diopter adjustable
<b>Objective Lens</b>	MPLFL2.5XP,NA=0.08,WD=9.8mm
	MPLFL100XP,NA=0.9,WD=1mm
<b>Camera Interface</b>	Standard C-mount 0.65X, parfocal adjustable, suitable for CCD within 1 inch
	Standard C-mount 1X, parfocal adjustable, suitable for CCD within 4/3 inch
<b>DIC</b>	High-resolution DIC, adjustable focal length High-resolution DIC, fixed focal length
<b>Stage</b>	Motorized stage with remote control handle Travel range: 100×100 mm Equipped with a slide holder for mounting 3 standard slides

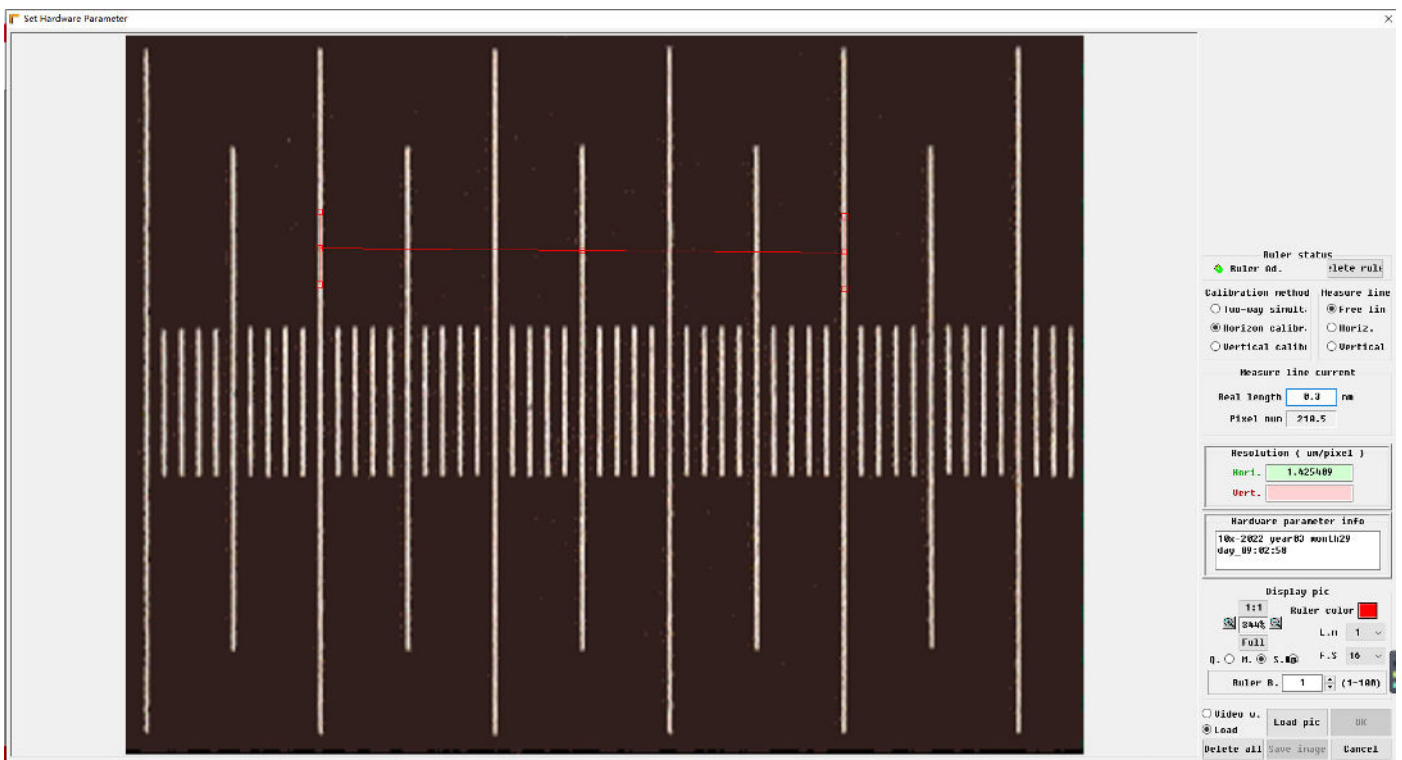
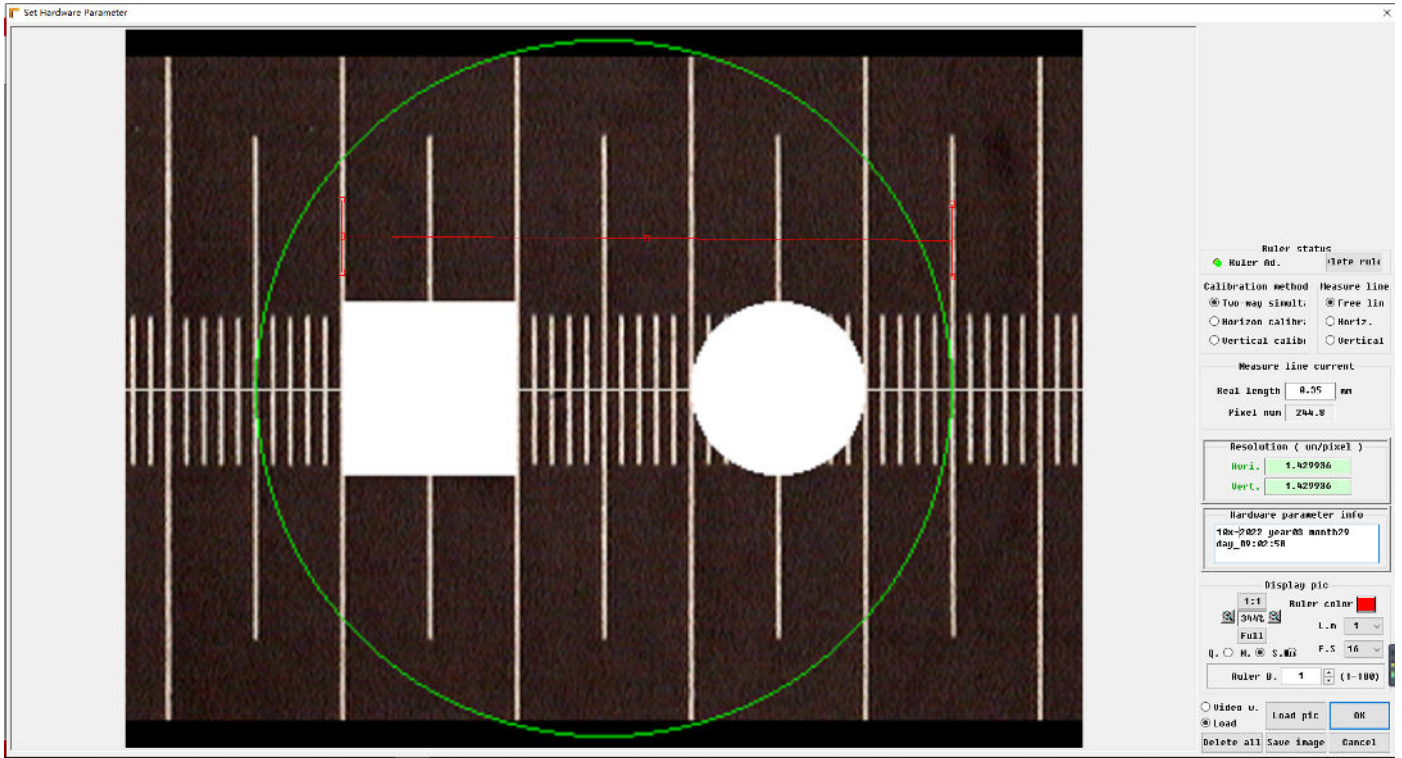
## iMetal-MA Metallographic Analysis Software



- The software supports hardware calibration and metallographic grade evaluation, covering international testing modules for grain size, inclusions etc. It has basic functions such as image preprocessing, accurate geometric measurement, multi-format report export and fixed-magnification printing, as well as image stitching, video acquisition, confocal imaging and 3D optical imaging etc. It supports atlas comparison and data statistics, It meets the standardized requirements of the entire metallographic testing process and is compatible with the Windows 7, 10 and 11 operating systems.

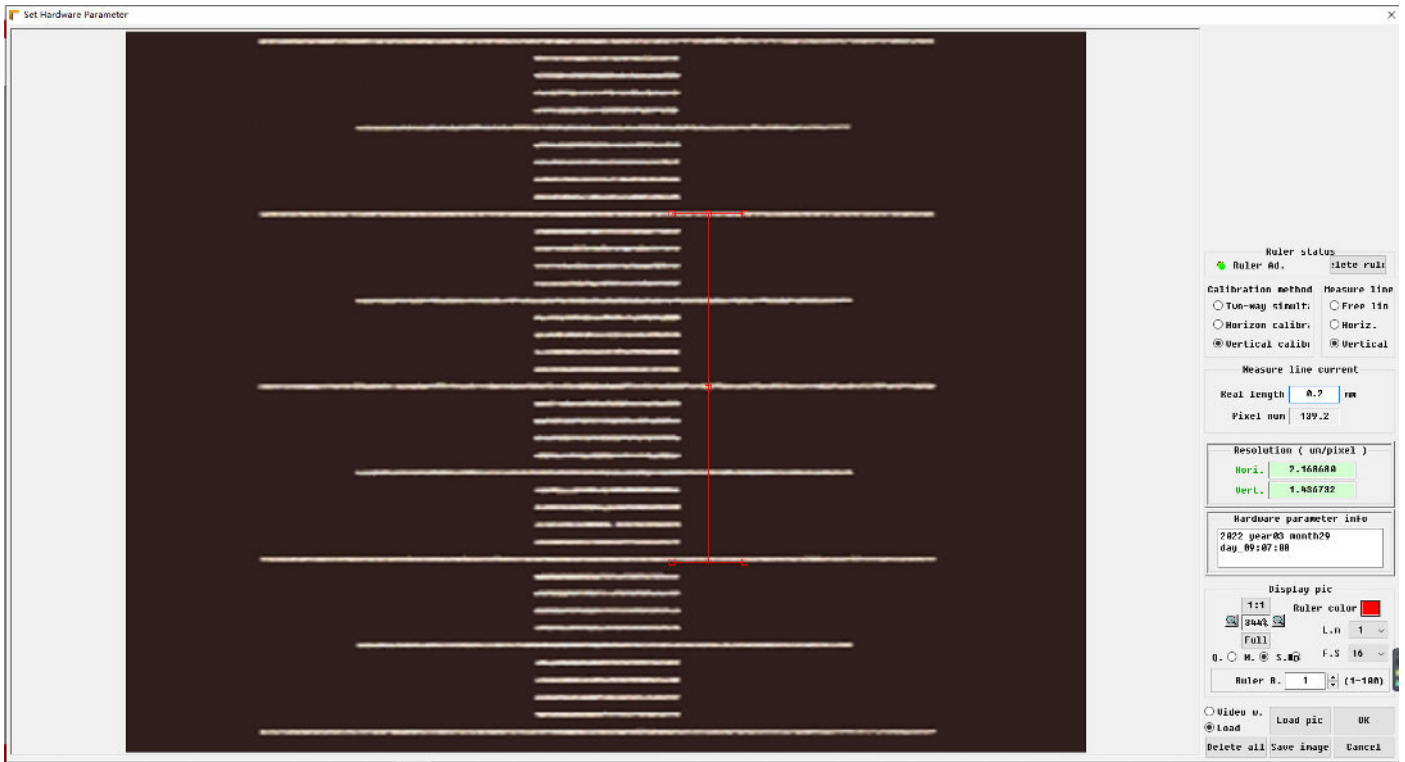
## Operation Interface

### Image Calibration



## Operation Interface

### Image Calibration

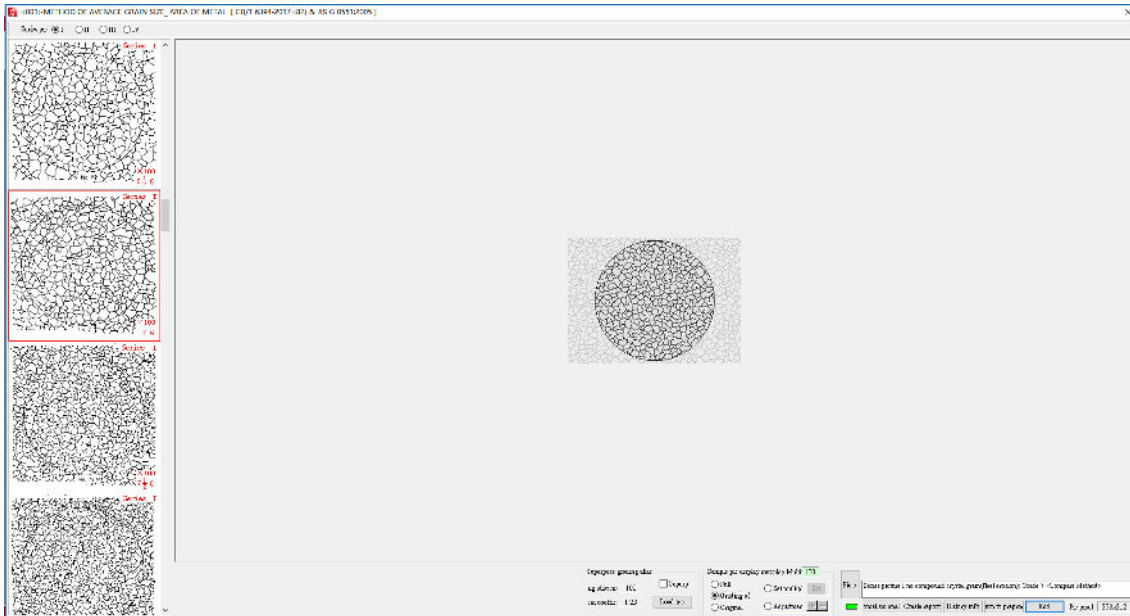


- The software supports three calibration methods (bidirectional simultaneous, horizontal and vertical) to adapt to different testing scenarios.
- The resolution can be automatically calculated only by loading the micrometer image, dragging the scale and entering the actual length, featuring simple and easy operation.
- The calibration results can be verified through geometric measurement with the error controlled within a minimal range, laying an accurate hardware foundation for subsequent measurement and grading. Meanwhile, it supports the export and import of resolution parameters to realize rapid reuse across multiple devices and scenarios.



## Operation Interface

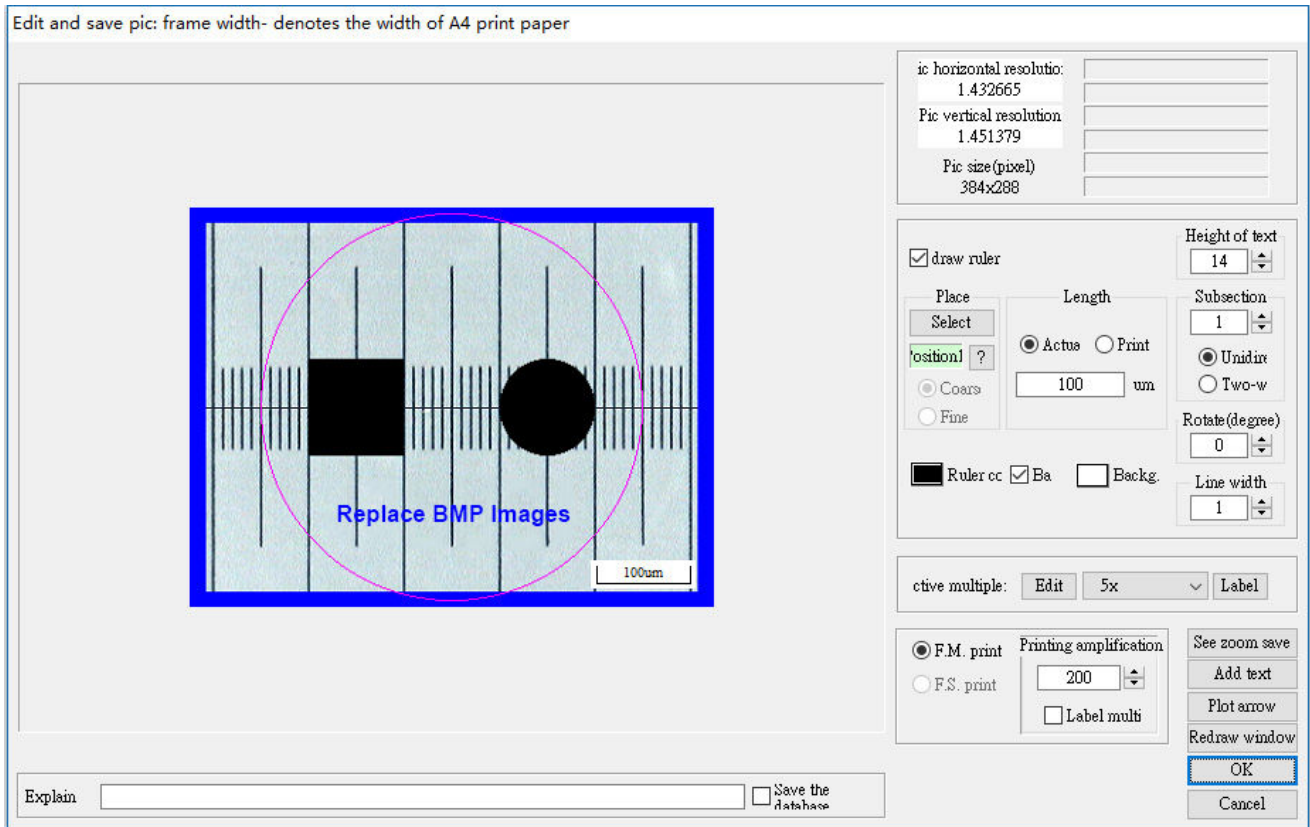
### Metallographic Grade Evaluation Function



- Comprehensive testing coverage: It covers mainstream testing items such as grain size, non-metallic inclusions, ductile iron and ferrite in stainless steel welds, and is adapted to national and international standard modules to meet the metallographic testing needs of various products.
- Adaptation of dual grading modes: It supports manual comparison grading and automatic quantitative grading. The former enables intuitive atlas comparison, while the latter accurately identifies microstructures and automatically calculates parameters, taking into account different testing scenarios and precision requirements.
- Convenient module retrieval: Testing modules can be sorted by number/standard number or quickly retrieved by keywords, which greatly improves the efficiency of module searching and makes the operation more efficient.
- Manual correction of results: It supports manual adjustment of metallographic microstructure attributes, addition/deletion of feature points and correction of automatic identification deviations. It also supports multi-field statistics for averaging to ensure the accuracy of grading results.
- Seamless connection of results to reports: Grading results can be directly linked to the report generation function, and standardized reports in PDF/WORD/EXCEL formats can be exported with one click, realizing a closed loop of the entire process from testing and grading to report generation.

## Operation Interface

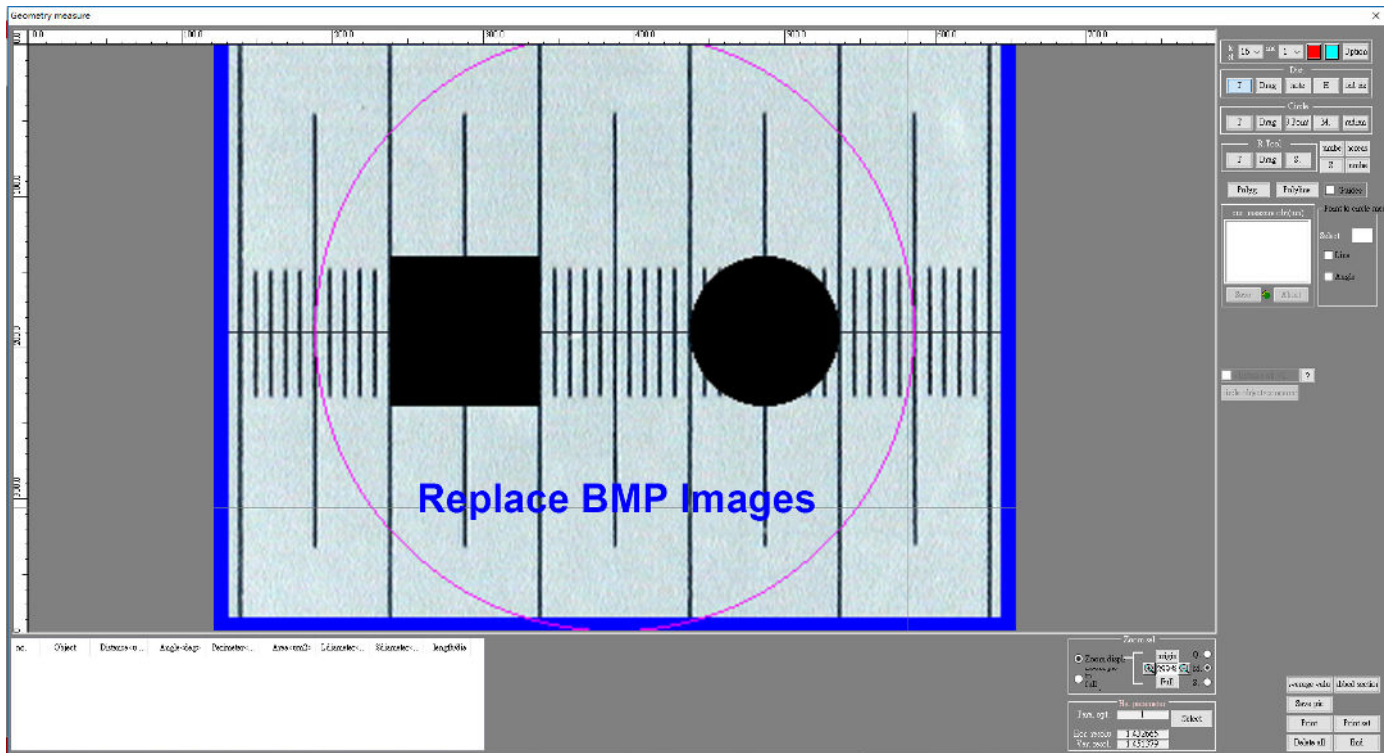
### Image Preprocessing



- Rich processing tools: It is equipped with dozens of professional tools such as brightness/contrast adjustment, binarization, sharpening and softening, filtering and denoising, and morphological operations to meet the optimization needs of various metallographic images.
- Flexible selection operation: It supports multiple selection methods including rectangle, ellipse and polygon. Selections can be moved and rotated, and precise pixel-based selection is also available, adapting to local and overall image processing scenarios.
- Customized output: Scales, text and arrows can be added when saving images, the printing magnification can be customized, and fixed-scale printing settings are supported to meet the requirements of standardized output.
- Efficient and convenient operation: Commonly used processing functions are integrated into exclusive panels, which can be called with one click without searching through multiple layers of menus, greatly improving the efficiency of image preprocessing.
- Complete data retention: It supports saving selected areas/entire images in BMP/JPG formats, the processing process is traceable, and the processed images can be directly connected to grading, measurement and report functions for smooth process connection.

## Operation Interface

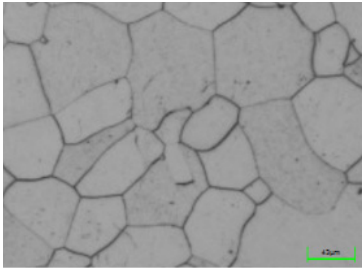
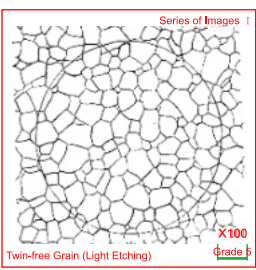
### Geometric Measurement



- Complete measurement tools: It supports various types of measurement including distance, rectangle, circle, polygon, angle, radian and point-to-center distance, covering the full-dimensional geometric measurement needs of metallographic testing.
- Units such as nm/um/mm can be freely selected, and the directions of measuring lines, arrows and text can be customized.
- Measurement results can generate image-text reports in real time and can also be directly imported into Excel for secondary analysis.

## Operation Interface

### Report Export

(Report name)	
(Submission unit)	Sample Submission Date: 2018-01-01
(Submission unit)	(Submission unit)
(Sample Varieties)	(Sample Varieties)
(Test number)	(Test number)
Inspection Item & Assessed Grade:	Item: Average Grain Size of Metals - Test Method for Average Grain Size of Metals (Area Method) [GB/T 6394-2017(8.2) & JIS G 0551:2005] Grade Type: Series of Images   Twin-free Grain (Light Etching): Grade 5 <Comparison Method>
Image for Sample No.1: (Print Magnification: 280×)	Image for Sample No.2: (Print Magnification: 171×)
	
(Remarks)	(Remarks)
(Surveyor)	(Check)
Sample Submission Date: 2018-01-01	

- It supports universal report formats for single/multiple images, which can be selected on demand to adapt to the report presentation needs of different testing scenarios. Grading and measurement results can be exported in three mainstream formats (PDF/WORD/EXCEL) with one click, meeting different usage needs such as filing, editing and data statistics.
- Grading and measurement results can be directly linked to report generation without manual data entry, realizing the seamless connection of testing, results and reports and improving the efficiency of report generation.