



TOP SALES

Image Processing Software

IN JAPAN

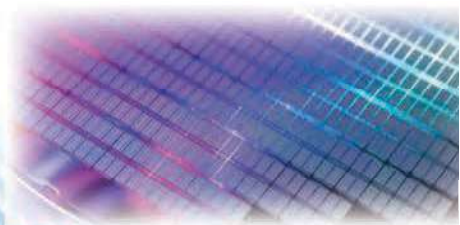
Since 1995

Multilingual
Japanese/English

Image Analysis/ Measurement software

WinROOF 2021

WinROOF 2021
Image Analysis and Measurement
Software

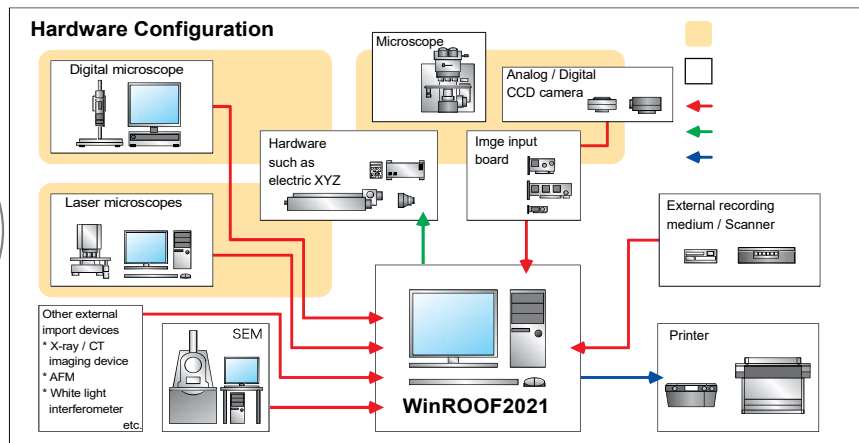
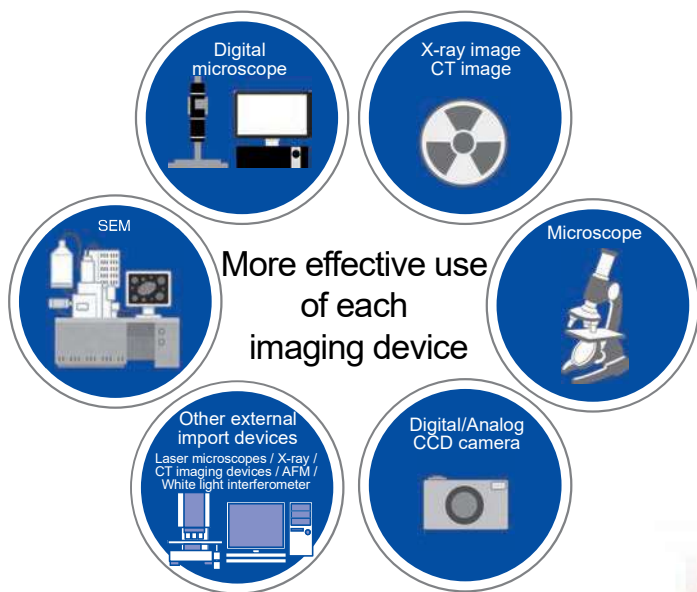


MITANI CORPORATION



Present-day society is full of technologies in the medical, construction, energy, steel, food, automobile, semiconductor, and other fields. These technologies are continuously being upgraded, and we have entered an era in which solutions that use “images” are indispensable.

Images contain huge amounts of information. Technology that maximums the information obtained from an image, it is the “Image Analysis”.



- ▶ Objectively evaluate the “Observation” with numerical values.
- ▶ Much simpler and efficient “Measurement” using images
- ▶ Safe and comprehensive support for even the most inexperienced users

Japanese technology supported by **WinROOF2021**

The [WinROOF] series is image analysis and measurement software which has been sold on the market for more than 30 years. Over ten thousand of these packages have been introduced in a variety of fields, and are being used by many customers. We have released the latest version of [WinROOF2021] in order to meet the requirements of our customers. In addition to the newly developed functions, please try out the useful functions which are now standard features.

We support your technologies as partners in the field of “image analysis” which will open up the future.

Software Lineup








The WinROOF2021 lineup is broadly divided into two models, "WinROOF2021 Standard" and "WinROOF2021 Lite". "WinROOF2021 Standard" can be widely used for image analysis including Binarization, and features automatic processing by Macro function. On the other hand, "WinROOF2021 Lite" specializes in the manual image measurement and camera integration functions such as focus composition.

In addition, an option module that can be used matched to the application for each user is available, to enable functions to be added according to the various methods of use.





For the detailed functions descriptions of the Lite model, Standard model, and various options, please refer to each introductory page.



Options

-  Needle separation measurement option
-  Ring thickness measurement option
-  Alignment correction option
-  Grain boundary separation measurement option
-  Automatic imaging • automatic analysis system construction option
-  AI Class Classification Option
-  Digital I/O Control Option NEW

Also included in "Lite"

-  Image Quality Improvement Option NEW
-  Material Option
-  3D Option
-  Option to build an automatic imaging and connecting system NEW

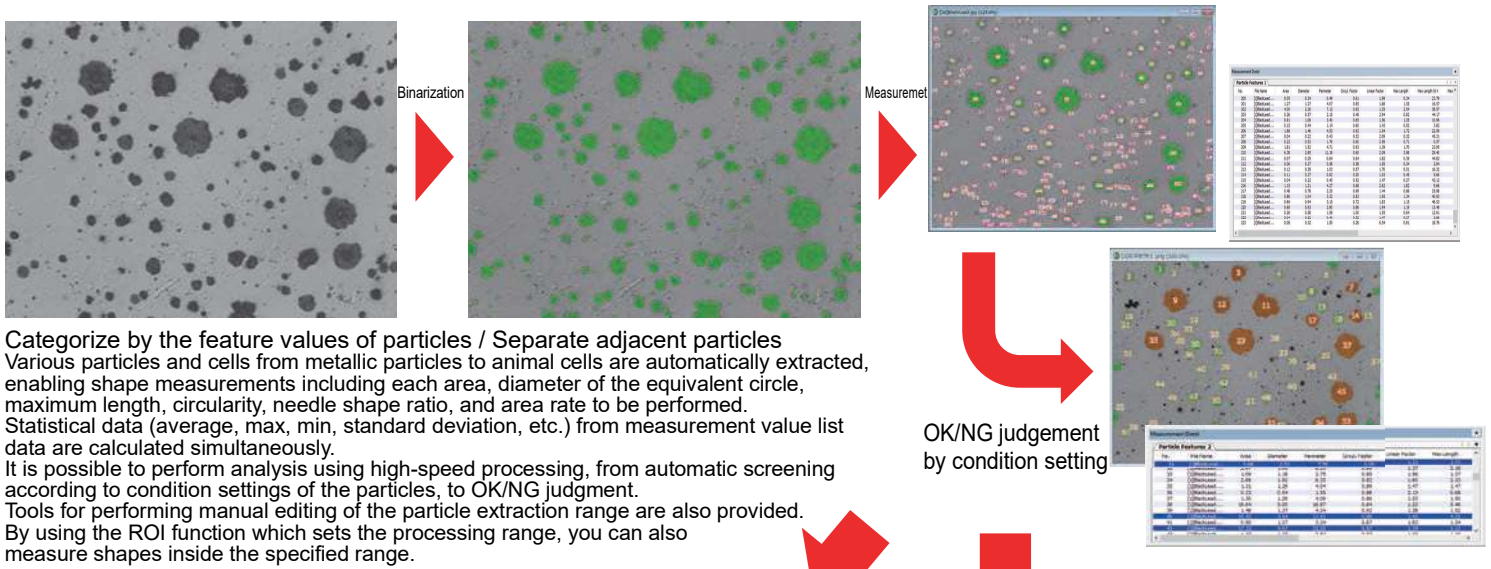
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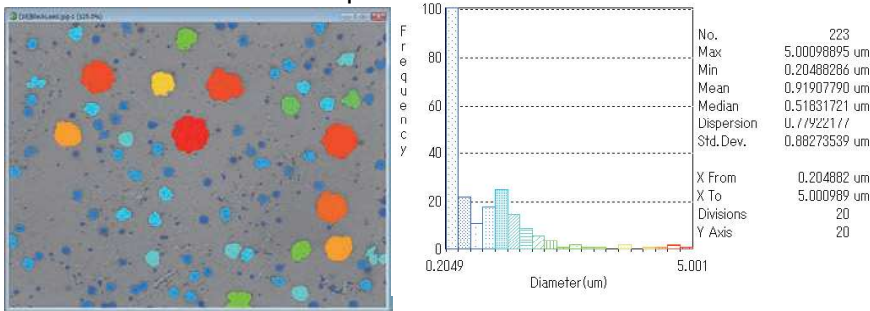


Standard

Particle Measurement / Statistics Calculation

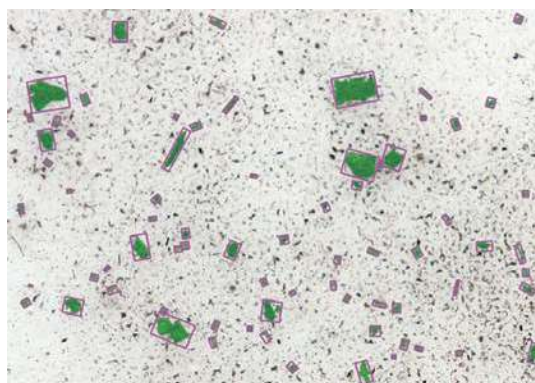
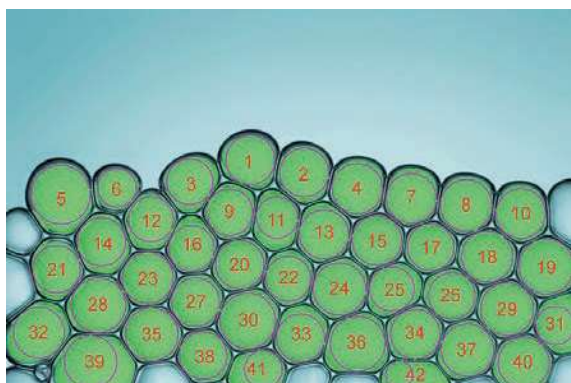


Automatic creation of frequency distribution (histogram)



A graph of frequency distribution can be made automatically from the measurement data. (The axis settings can be made freely.)
 Also, the classification of the frequency distribution can be color-coded and a color display created, resulting in a visual expression.
 This function can be used for all measurement items. It can also be used to measure the particle distribution from the particle size, and to evaluate the orientation from the distribution of shape due to the circularity and also the distribution of direction.
 The display can also be switched to the frequency distribution table.

Analysis Examples (Binarization/Color Extraction)



Left:
 Counting of dense particles, measurement of the maximum inscribed circle, measurement of the equivalent circle (circle equivalent diameter), and calculation of the average particle size are also possible.

It is also possible to delete particles that protrude outside the screen, such as No. 32 and 39 in the left figure.

Right:
 Detection of contamination on the filter
 Measurement of maximum length and width (long and short diameters)



Metallic materials/
Material
manufacturing



Construction·
Business related to
road



Oil·Coal·Chemical
Industry



Food manufacturing



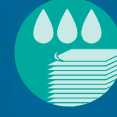
Life·Pathology·
Clinical/Research



Electrical parts/
Circuits·Precision
machine
Manufacturing



Plastic·Rubber
product
manufacturing



Paper·Pulp
manufacturing/
Publications·Printinging

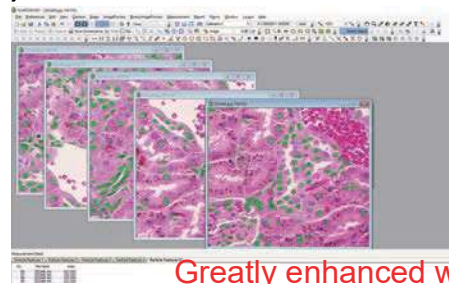
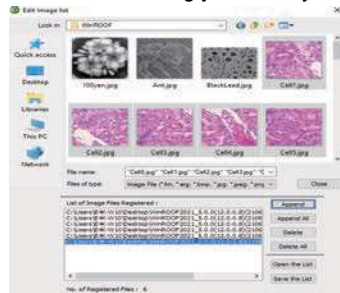
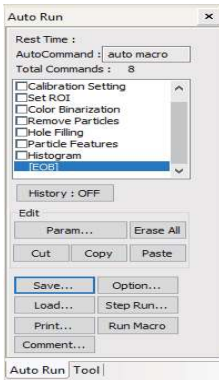
Automatic Processing Macro Tool

When carrying out the procedure defined for the image analysis and measurement, you can register the procedure as a single command, thus greatly enhancing the work efficiency.

Creating an automatic processing macro

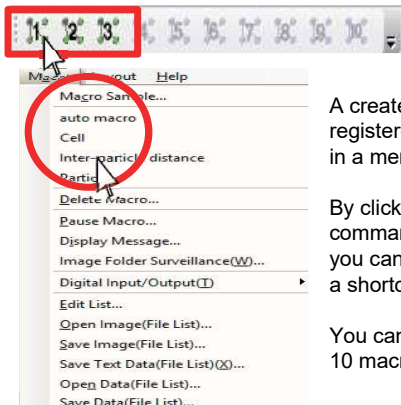
Simply execute the actual processing procedure in sequence, and the software will memorize this procedure, enabling a macro to be created.

If you wish to change the parameters each time you run the macro, place a check mark against the registered command. As a result, macro running will stop momentarily for exactly the processing time of that command, enabling you to carry out fine adjustment.



Greatly enhanced work efficiency!

Register macros to tool bar/ function key



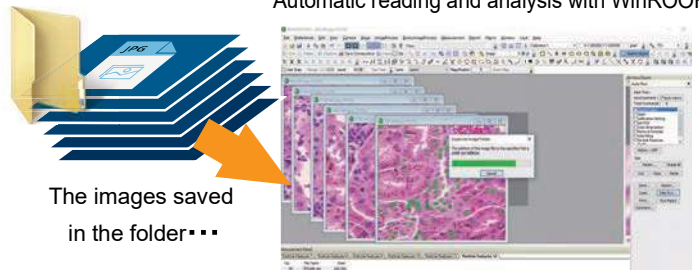
A created macro can be registered on the toolbar, in a menu or in a function key.

By clicking on an icon or command in the figure at left, you can execute a macro as a shortcut.

You can register up to 10 macros on the toolbar.

Folder monitoring function

Automatic reading and analysis with WinROOF2021



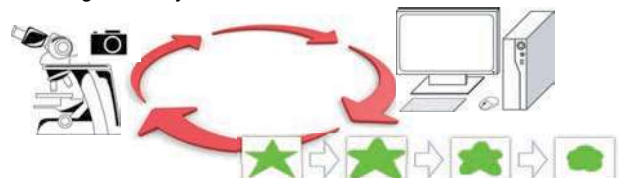
The images saved in the folder...

By using the folder monitoring function, the fact that an image is stored in the specified folder will be detected, thus enabling the process to be performed automatically. By specifying a folder that contains multiple images, you can perform automatic batch processing of these images.

Application Examples of Automatic Process Tool

① By using the folder monitoring function, you can perform image analysis coordinated with an imaging device. For example, by simply storing images acquired from a digital camera or a microscope, image processing simultaneous parallel processing can be performed, enabling the analysis time to be reduced.

※ Automatic processing macro construction can be provided by our staff for a free.



② Numerous images acquired in the same measuring environment (image size, magnification and brightness) can be batch-processed. It can greatly improve work time efficiency.

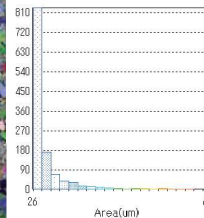
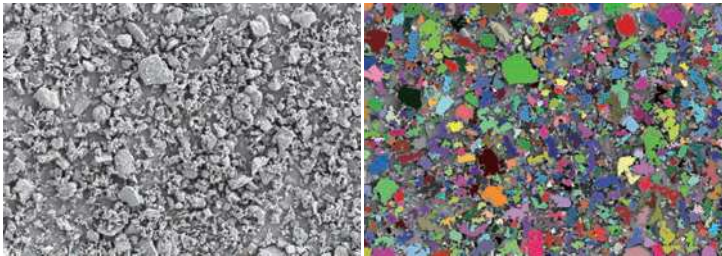


③ Anyone can get the same data in one-button by utilization of function keys registration. It is as simple as pressing a registered function key, such as F1 key to execute Process A, F2 key to execute Process B, and so on.



Standard

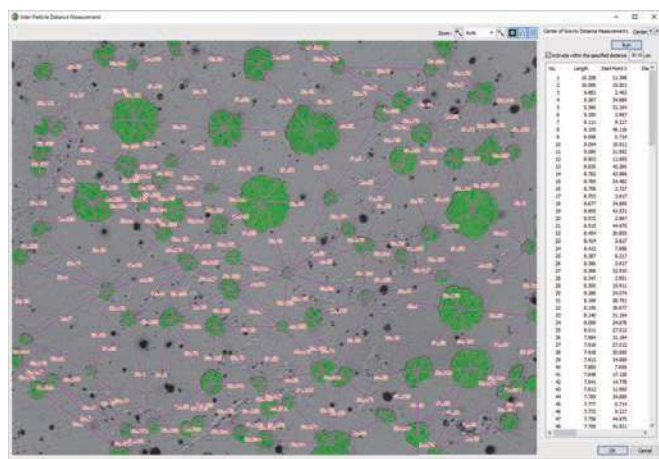
Watershed (Particle separation function)



Separation of agglomerated particles and areas

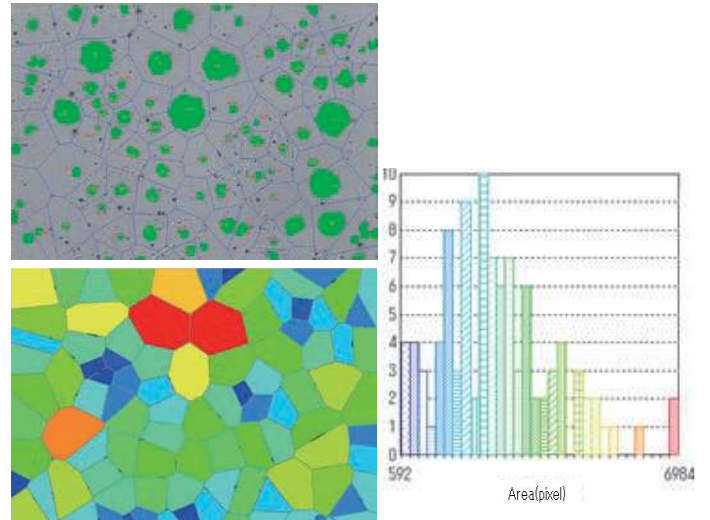
This function separates particles and regions concentrated in a dense state. It enables particles to be separated from each other automatically when they are in close contact with each other and connected to lumps by binarization. This separation processing enables the accuracy of measurement and counting to be improved.

Inter-particle Distance Measurement



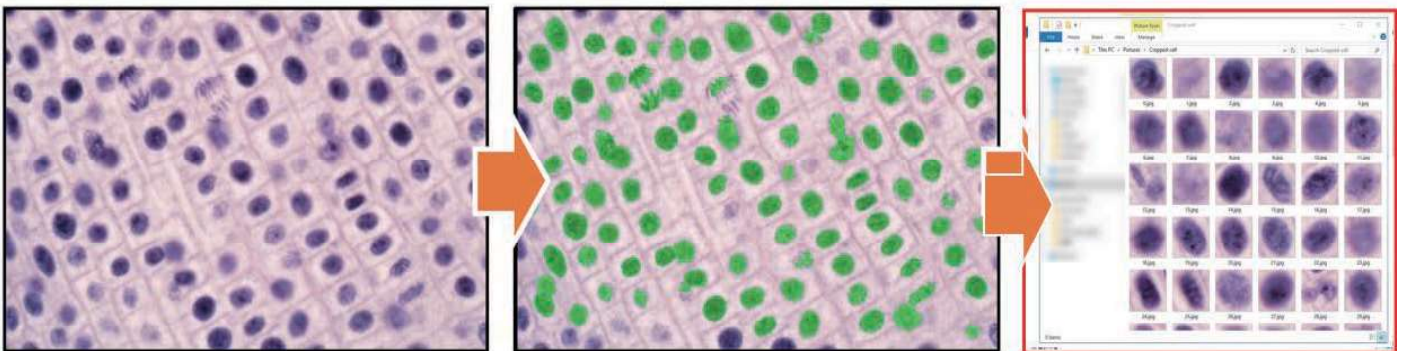
This function determines pairs of most neighborly particles and measures particle-to-particle distance (center of gravity / edge distance). It evaluates dispersion of particles by listing up distance data and outputting distribution or statistical data. You can complete measurements more efficiently and accurately.

Voronoi Subdivision Measurement



This function divides the image into "Voronoi regions" and permits to measure each region, in order to evaluate dispersion of the particles in an image as a general approach. It is possible to weight the region by particle size

Particle Image Output



The particle image output function is capable of saving the images of each detected particle as an image file. The particle images detected by binarization, watershed, etc. is available for a variety of purpose, such as making a report or reviewing, or using as teacher data for creating AI training models.



**Metallic materials/
Material
manufacturing**



**Construction ·
Business related to
road**



**Oil · Coal · Chemical
Industry**



Food manufacturing



**Life · Pathology ·
Clinical/Research**



**Electrical parts/
Circuits · Precision
machine
Manufacturing**

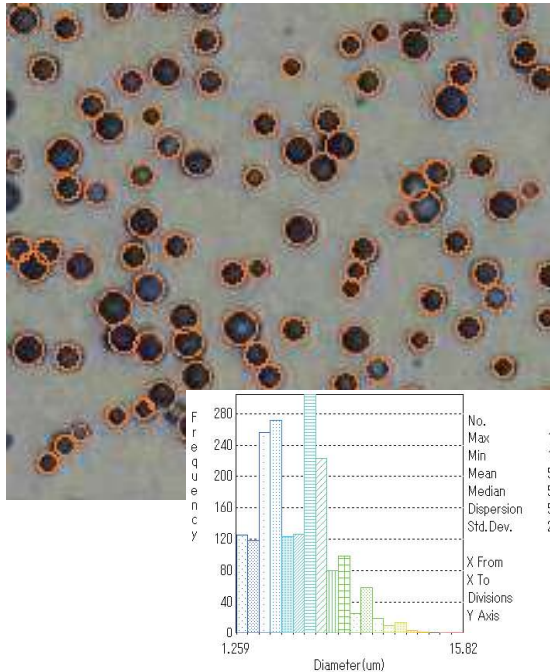


**Plastic · Rubber
product
manufacturing**



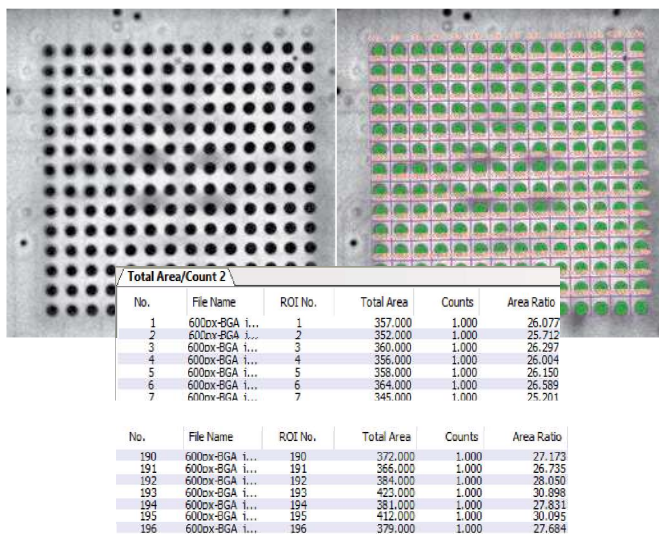
**Paper · Pulp
manufacturing/
Publications · Printing**

Circular / Polygonal Particle Measurement



When particles overlap each other, it is difficult to perform accurate measurement during normal particle analysis. When using this function, our unique circle pattern matching technology enables you to separate the overlapping particles and carry out measurements such as particle count, particle diameter, and area. This function can predict a certain amount of overlap from the circle edge, and obtain the outline of the particles.

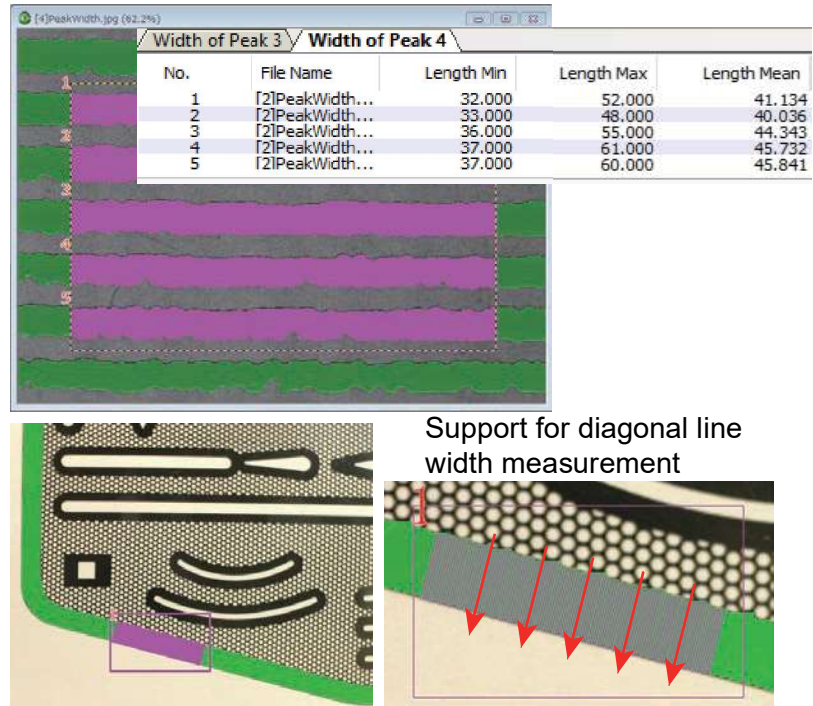
Grid Analysis (Grid ROI)



Measurement values can be output separately for each area (grid ROI) divided into grid-like cells. The grid interval and number of divisions can be set as desired.

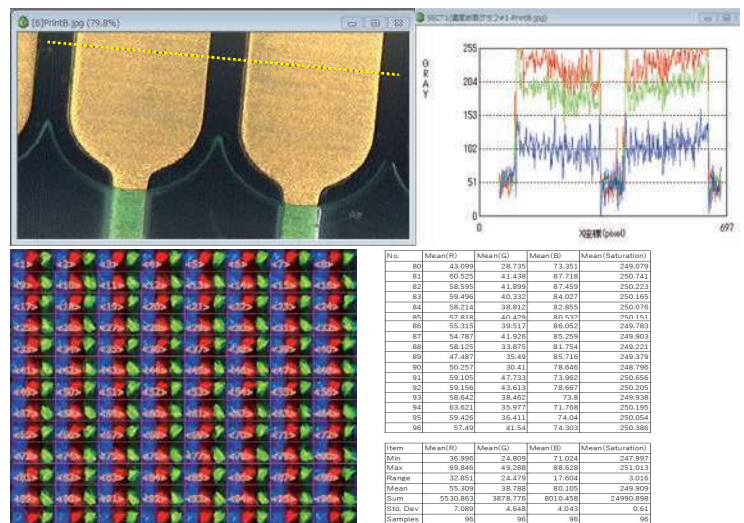
By measuring the area ratio of each plot, it can be used to.

Automatic line width measurement



Automatically measures the line width for multiple lines. Since an average value of the width over a specified area can be obtained, the effect of unevenness can be reduced compared to measuring at a single location. The maximum and minimum widths can be calculated from the width of each pixel at once, and the system is used for defect inspection such as detecting chips in wiring patterns. It also supports LER (Line-Edge Roughness) and LWR (Line-Width Roughness) in compliance with SEMI standards.

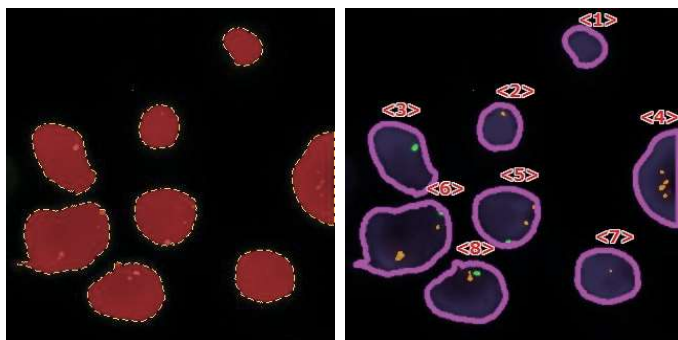
Intensity Measurement · Profile Measurement



Profile measurement of intensity (brightness and height) data on a line is possible. It is also possible to measure the density of each specified area. Red, Blue, Green, Hue, Brightness, Saturation, and Height can be calculated as concentration values. Intensity measurement can also be used for particle analysis.

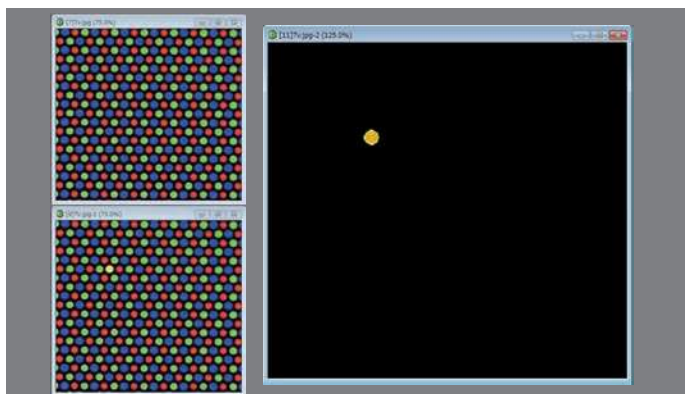
Standard / Lite

Multiple Area Analysis (Mask ROI)



In the region of interest(ROI) setting, it is possible to automatically set multiple ROIs (mask ROI), where are areas automatically extracted by binarization, etc. Then they are numbered at the time of measurement. Further extraction within the mask ROI can be used to measure the number of particles and the area ratio in each ROI.

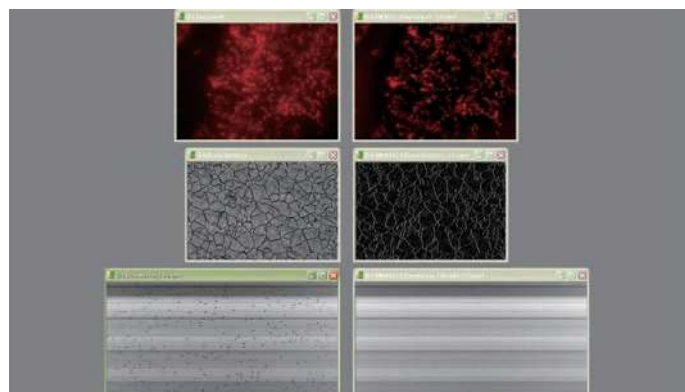
Image Operations



Calculations can be performed between images. For example, by taking the difference, abnormalities such as missing dots can be detected and OK/NG judgment can be made. It is also possible to measure black and white areas by adding up the binarized areas and superimposing them.

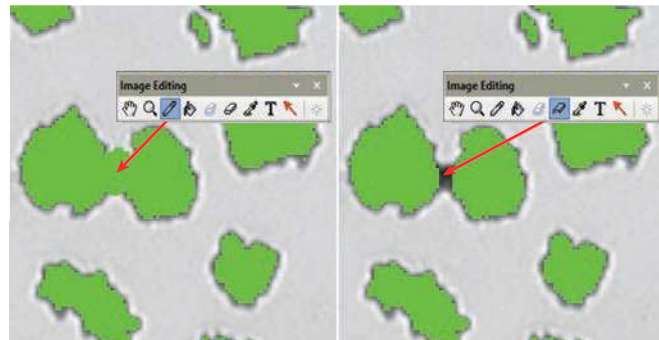
Filter Processing

Also included in **Lite**



Utilization of various filters, such as image edge enhancement or noise removal, generates suitable images for analysis.

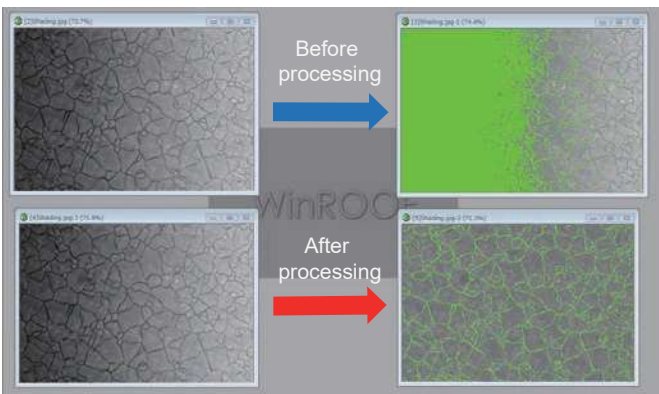
Manual Editing (Pen/Eraser Tool)



Areas extracted by binarization, etc. can be modified using the manual editing tool. It is possible to add a step in the automatic process to pause and edit, creating a "semi-automated" macro. By effectively using the editing function, it is possible to obtain analysis results that are closer to the ideal.

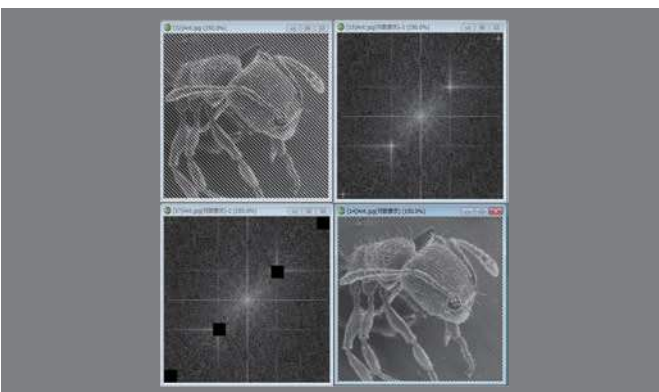
Uneven lighting Correction

Also included in **Lite**



Depending upon the photographing magnification and the size of the area exposed to light from the illumination according to the angle and distance, a partial difference between light and dark may occur. By using this function, you can eliminate illumination irregularities. This is an effective preprocessing tool when binarizing the entire screen image uniformly.

Fourier Transform (FFT)

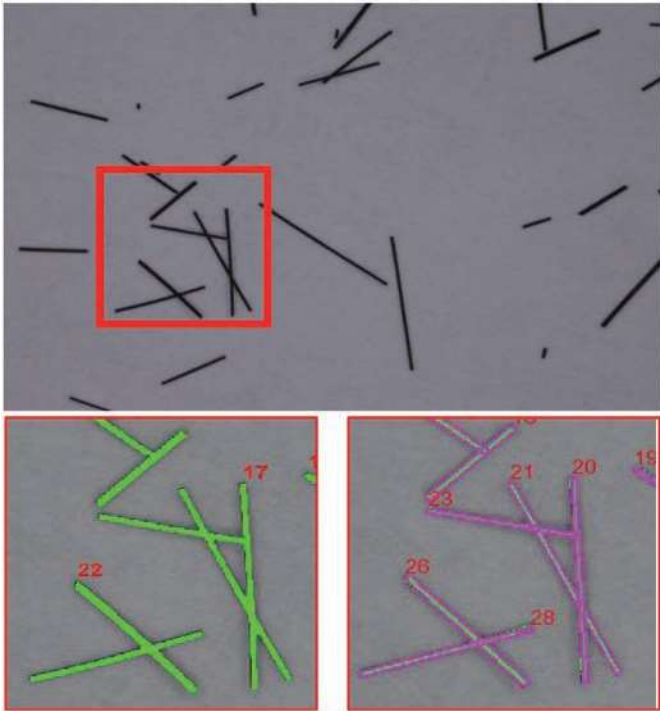


Conversion of a image to frequency values data and deletion of frequency values in certain region enables to create of a clearer image.

Options

By adding this function to WinROOF2021 Standard, we can provide options that enable the usefulness of the software to be enhanced. This function meets the needs of the site in various fields. It was developed using our unique algorithms. All options must be purchased at cost.

Needle Particle Separation Measurement OPTION

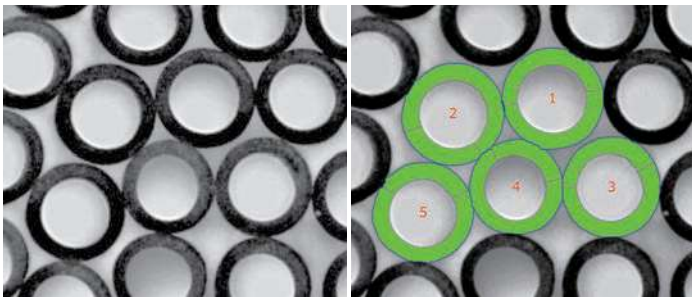


Option unused

Used (separated)

In the case where needle shape particles intersect each other, during normal image analysis they are deemed to overlap each other to form a single particle. At that time, it is possible to be used to separate individual particles and measure the needle-like particles. It is effective for objects that are long and thin and easily overlap, such as fibers.

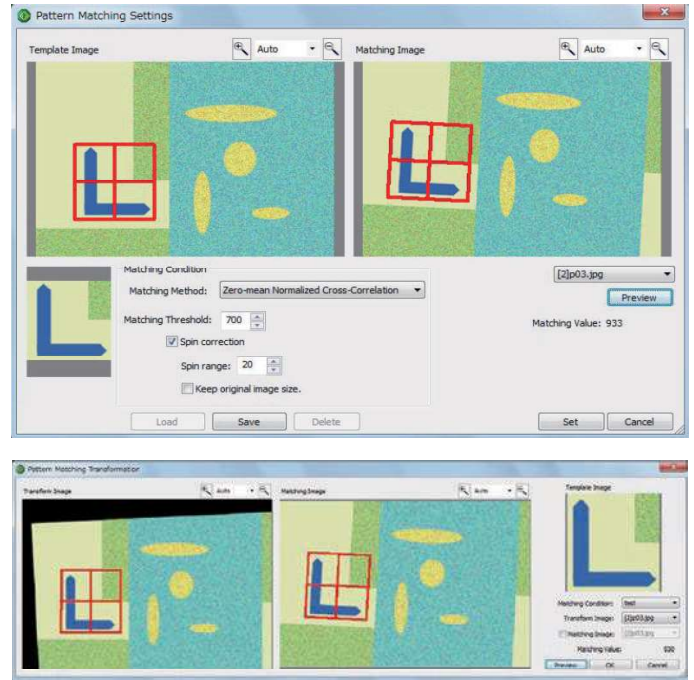
Ring Thickness Measurement OPTION



No.	Ring No	Angle	Width	λ	λ	λ
1	1	0	115.000	1789	5	348 112.588
2	1	1	114.018	1790	5	349 113.159
3	1	2	114.070	1791	5	350 113.772
4	1	3	113.159	1792	5	351 112.294
5	1	4	113.283	1793	5	352 112.009
6	1	5	115.434	1794	5	353 110.766
7	1	6	116.619	1795	5	354 112.641
8	1	7	116.966	1796	5	355 114.438
9	1	8	118.089	1797	5	356 116.276
10	1	9	119.365	1798	5	357 117.154
λ	λ	λ	λ	1799	5	358 119.105
				1800	5	359 118.017

It is possible to easily measure the film thickness of fibers and hollow fibers, which are difficult to image process. It can be used to evaluate the quality of products and materials used in filters.

Alignment Correction OPTION

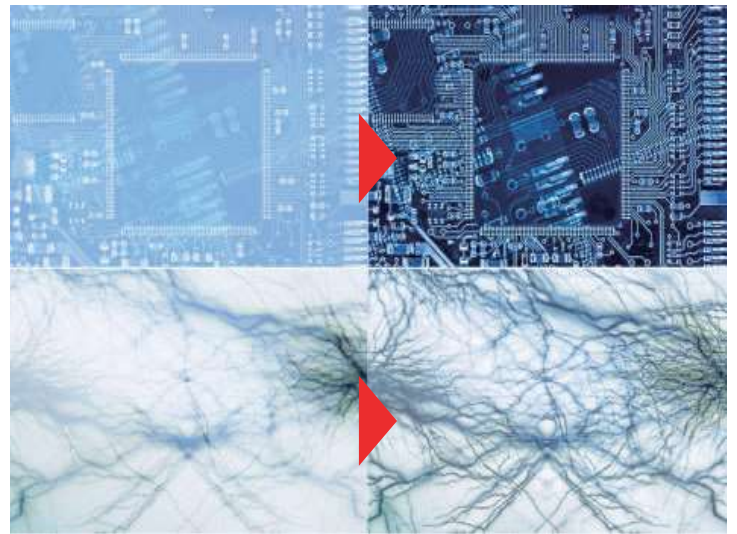


A reference image can be registered in advance, and when another image is opened, the position of the reference image is automatically corrected to be the same as the registered image.

When another image is opened, it is aligned to the reference image by correcting the XY position and angle through pattern matching processing.

This is useful for automatically processing multiple images at once with the macro function.

Image Quality Improvement OPTION



Also included in Life The differential hysteresis algorithm provides a clearer image than can be obtained by general luminance or spatial filter image improvement. It effectively emphasizes the characteristic edges of the original image and improves the image quality.

Options

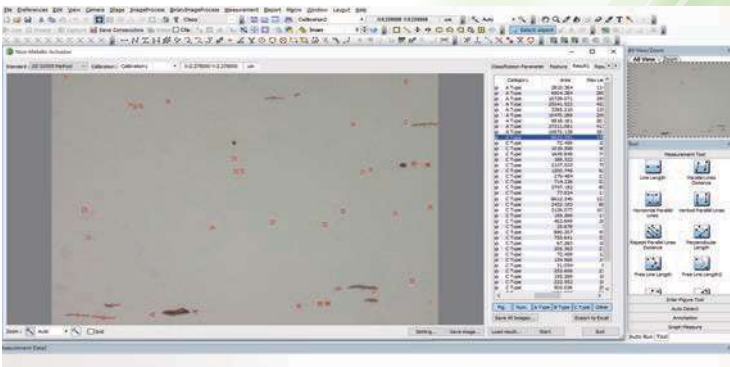
By adding this function to WinROOF2021 Standard, we can provide options that enable the usefulness of the software to be enhanced. This function meets the needs of the site in various fields. It was developed using our unique algorithms. All options must be purchased at cost.

Material Option **OPTION**

Also included in **Lite**

"Material Option" is an option that combines the functions required for electrical analysis in the metal field into a single package. Measurement of non-metallic inclusions. Non-metallic inclusions measurement, Graphite spheroidization rate measurement and grain size measurement (comparison, cutting, and counting methods) are available. This is a powerful option for analysis in the field of metals. It can also be added to WinROOF2021 Lite.

Non-Metallic Inclusion Measurement



Automatic analysis and measurement of non-metallic inclusions in steel quality tests can be performed. Batch analysis is possible by selecting multiple image files or specifying files. It is compatible with JIS G 0555 point calculation method (TiN determination) and ASTM E45 worst field method.

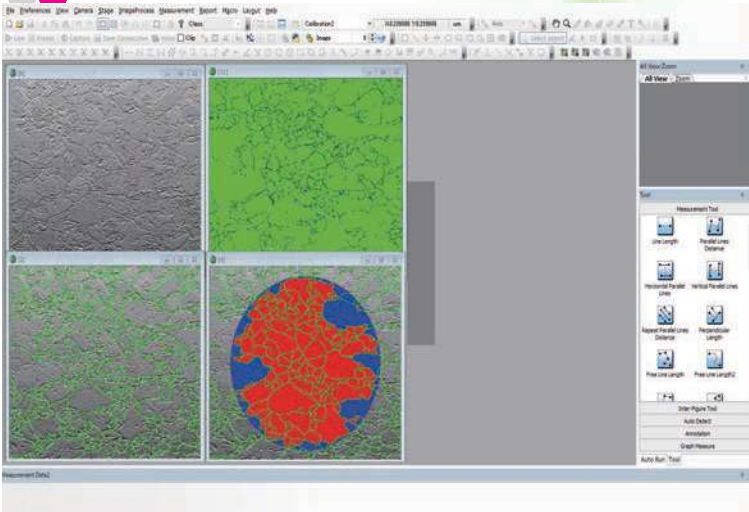
The number, area, size, etc. of detected inclusions can be measured using arbitrary parameters, and can be classified into inclusion category A, B, C, etc., and the cleanliness of each system can be calculated.

The analysis recipe can be reproduced by saving and loading the condition parameters.

Past analysis results can be loaded for easy confirmation.

Results can be saved in CSV format or transferred to Excel for report output.

Cristal Grain Size Measurement



Grain number can be calculated by grain size measurement.

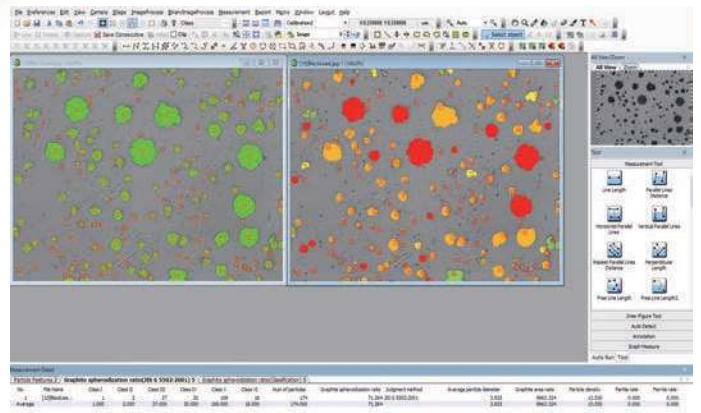
Measurement of ferrite and austenite based on JIS G 0551 and ASTM E 112, and measurement of copper and copper alloy drawn materials based on JIS H 0501 are supported.

The comparison method enables automatic recording, data storage, and reporting of visual evaluation.

Automatic calculation using binarization is possible using the cutting method and the area counting method.

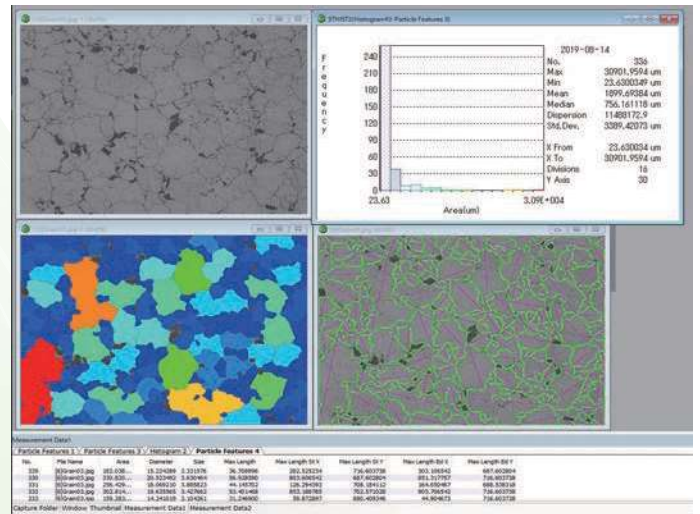
For any of the above three methods, results can be saved in CSV format and reports can be output via Excel transfer.

Graphite Spheroidization Rate Measurement



It is possible to measure the graphite spheroidization ratio of graphite cast iron. It corresponds to the old JIS, JIS G 5502:2001, JIS G 5505:2013, and ISO 16112:2006. Roundness, number of classifications, average grain size, pearlite ratio, and ferrite ratio, etc. can be calculated. Reports can be transferred to Excel for output.

Grain Boundary Separation **OPTION**



only **Standard** can be installed

This function enables the indecisive grain boundary to be automatically separated from the polished surface of the metallic structure, and also measures the particle diameter and area. It recognizes and separates the grain boundary, by a special algorithm, from an image which cannot be processed through normal binarization.

※Grain boundary measurement is a separate option from the Material Option. It is only available for WinROOF2021 Standard.



Metallic materials/
Material
manufacturing



Construction ·
Business related to
road



Oil · Coal · Chemical
Industry



Food manufacturing



Life · Pathology ·
Clinical/Research



Electrical parts/
Circuits · Precision
machine
Manufacturing



Plastic · Rubber
product
manufacturing



Paper · Pulp
manufacturing/
Publications · Printing



3D Option

OPTION

Also included in **Lite**

3D Image Generation

By carrying out photographing of a bumpy sample using an up-down stage or a Z-axis control device such as a Z coupler, you can create an image that is in focus over the entire surface, and also create a 3D image.

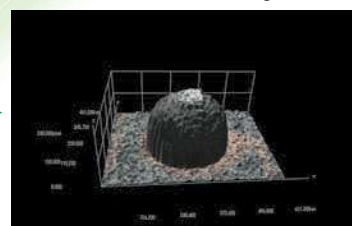
Bumpy sample



Creation of an image that is in focus over the entire surface



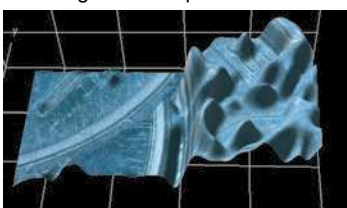
Creation of a 3D image



Filtering Horizontal Correction

This system comes with various kinds of filters such as those for noise removal and averaging, in order to obtain a cleaner 3D image. If the sample surface is inclined, the horizontal correction can be used to correct the inclination of the reference surface.

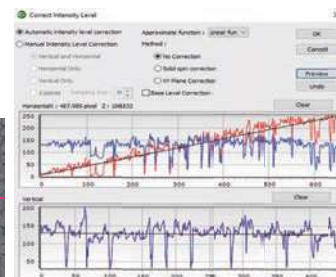
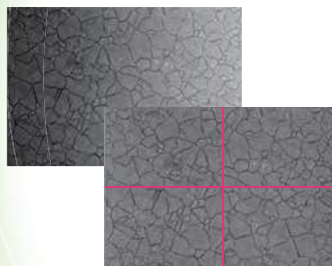
3D image after acquisition



After filtering



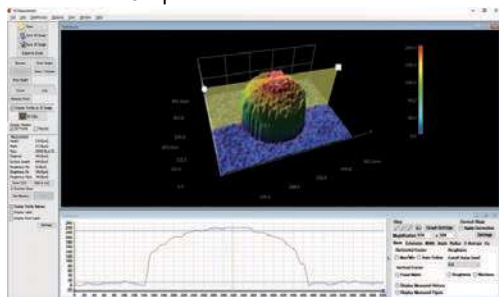
Horizontal Correction



3D Data Expansion Various types of 3D analysis

It is possible to read and extract 3D high/low images (height data) files acquired by CMMs and laser microscopes. Please contact us for the supported file formats. The software has all the functions necessary for 3D analysis, including XY and Z calibration settings and height reference plane settings.

3D profile measurement



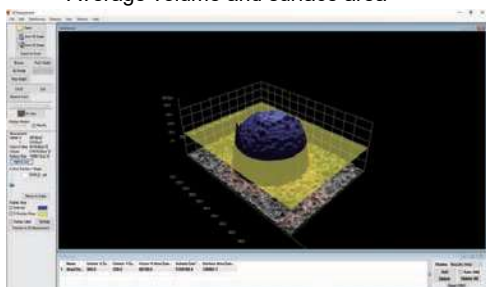
Average height (depth), average diameter, and number of pieces



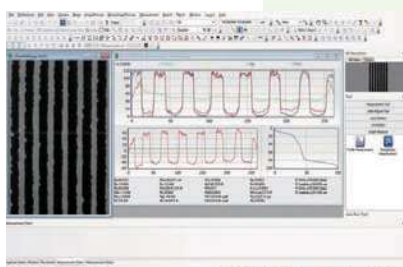
3D surface roughness



Average volume and surface area



Line roughness



Measurement Data2

3D-Surface Roughness 1				
No.	File Name	Sa	Sq	Sz
1	[1]	48.746	65.694	255.000

Roughness parameters
Sa, Sq, Sz can be calculated.

Roughness parameters
Ra, Rz, Rq, Rsk, Rku, etc. can be
calculated.

※The 3D Option can be added to Lite,
but some functions are only available in
Standard. Please contact us for details.

Options

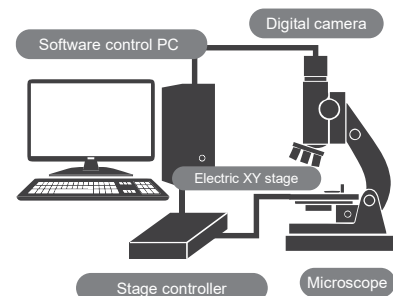
By adding this function to WinROOF2021 Standard, we can provide options that enable the usefulness of the software to be enhanced. This function meets the needs of the site in various fields. It was developed using our unique algorithms. All options must be purchased at cost.

Constructing an Automatic Photographing and Automatic Analysis System OPTION

By combining the "Captomotor" electric XYZ stage control software with the WinROOF2021, you can construct a system that automatically photographs the target at a predetermined location. In addition, the coordination with an Automatic Processing Macro permits linkage from photographing to analysis processing.

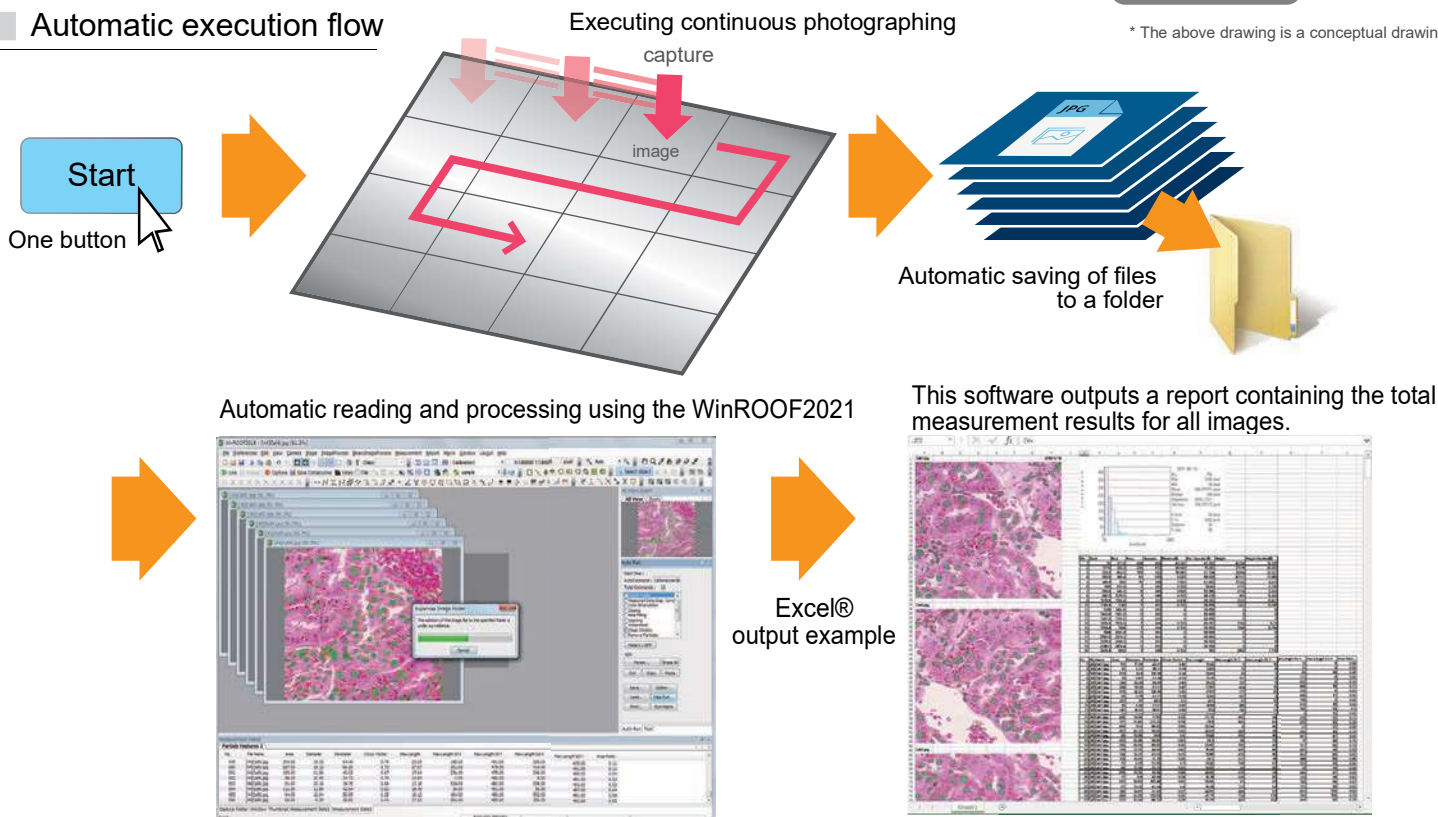
This function is used for automatic inspection where measurement is performed with the sample on the stage mounted on a microscope, particle diameter distribution measurement, foreign matter detection, statistical evaluation, or cell count for specific colors.

We can also propose a complete system set of the optimum configuration, including hardware such as a dedicated electrical stage that has newly become necessary in order to make effective utilization of your photographing facilities.



* The above drawing is a conceptual drawing.

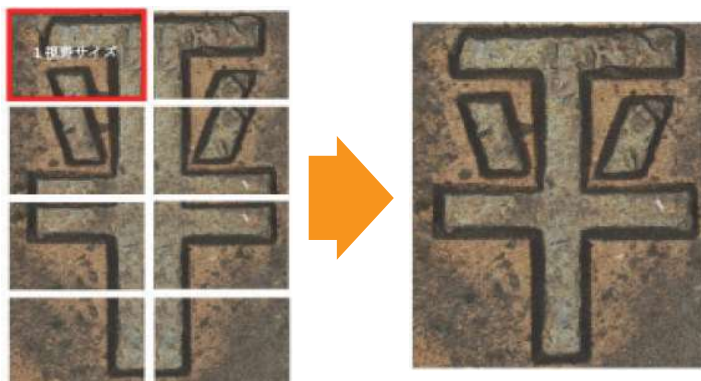
Automatic execution flow



This software outputs a report containing the total measurement results for all images.

Automatic imaging And Analysis System Construction OPTION

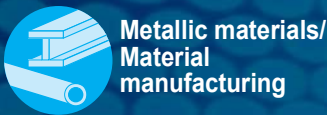
Also concluded in **Lite**



By controlling the motorized XY stage, it is possible to take fully automated images of the object and consolidate them together to create a high-resolution tiling image. The tiling pattern can be set not only for squares (short shapes) but also for circles and multiple areas. By using the Z-axis control device, it is possible to autofocus on each field of view or to consolidate images that are in focus on all sides within the field of view (3D Tiling).

The automatic image linking option is also available for WinROOF2021 Lite.

Please contact us for supported cameras and hardware.



**Metallic materials/
Material
manufacturing**



**Construction ·
Business related to
road**



**Oil · Coal · Chemical
Industry**



Food manufacturing



**Life · Pathology ·
Clinical/Research**



**Electrical parts/
Circuits · Precision
machine
Manufacturing**



**Plastic · Rubber
product
manufacturing**



**Paper · Pulp
manufacturing/
Publications · Printing**

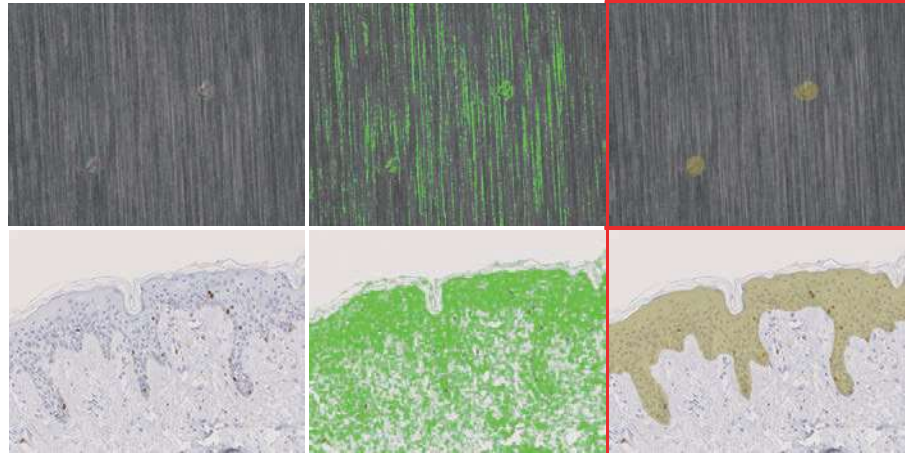
AI Detection **CONCEPT**

Hybrid method AI Image Analysis Solution

AI Deep Learning enables detection and judgment that have been considered difficult with conventional image processing. We propose the best system by combining "conventional image processing and AI Deep Learning". After detection by AI, it can be combined with conventional image processing by setting detection conditions such as size as a threshold value.

The first step is to consult with us about the purpose of implementation, including the imaging environment. Next, we will conduct the Proof of Concept (PoC) to confirm the results and discuss the direction of the system implementation.

※Please contact us for details on the implementation flow including PoC.

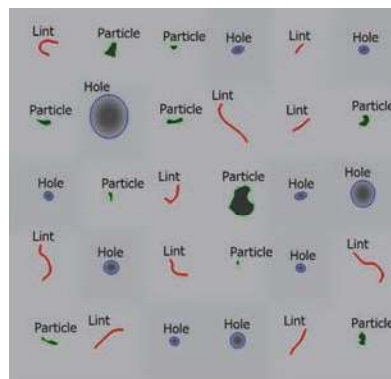


AI class classification **OPTION**

Previously, there were many cases in which classification could be performed using the human eye, but not when using a computer. There are many such scenes in conventional image analysis. However, by using the AI function to carry out teaching on the system, it is possible to perform classification just like a human would, from the shape, size, brightness, and so on, of particles that are similar to each other.

Features

- Classifies detected objects into up to 10 types by learning the results of human judgment.
- Even if the criteria for determining whether an item is good or bad is unclear, the criteria can be left to the AI.
- Any number of classification models can be registered
- No special GPU environment is required (model building can be done in a short time)
- Other functions in WinROOF can be used for preprocessing and postprocessing



Kind of defect	Lint	Particle	Hole
Item count	10	10	10
Average maximum length	83.173	45.112	45.442
Average area	444.9	977.5	1888.7
Average circularity	0.135	0.639	0.937
Average needle shape ratio	4.339	1.858	1.251

Classification results (* The image is a conceptual one.)

Digital I/O control **OPTION**



This function receives I/O triggers from external devices such as PLCs and robot controllers, performs image capturing, measurement/analysis, and OK/NG judgment, and sends the completion signal for each process.

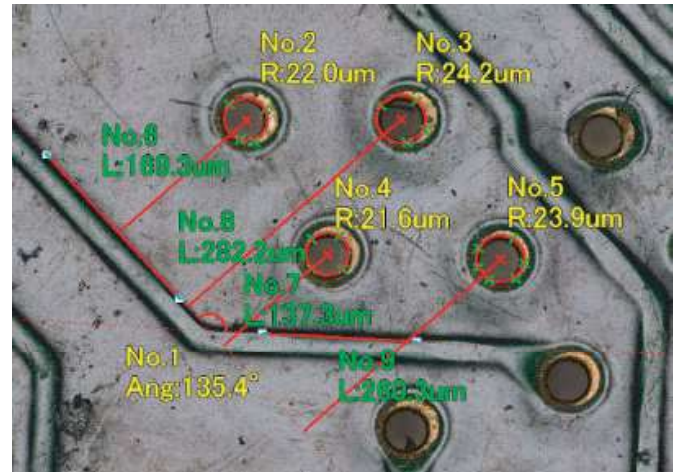
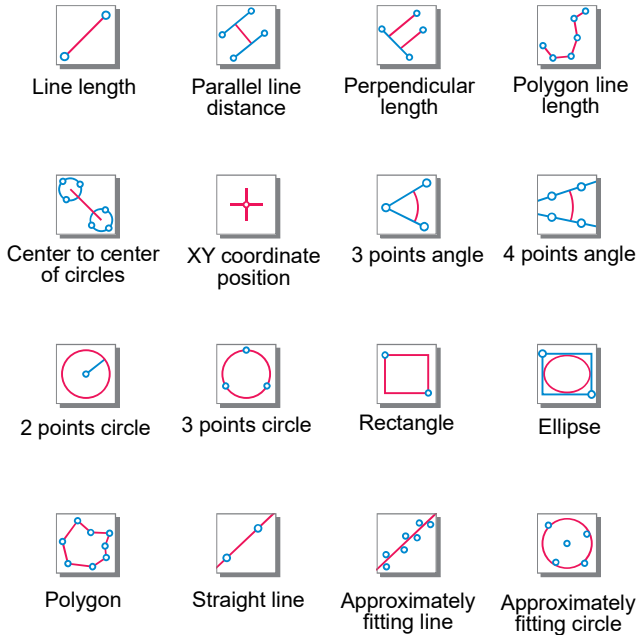
This function is recommended when you want to incorporate the image analysis function into your development equipment.

※Recommended digital input/output device CONTEC's DIO-1616T-LPE (Please contact us to discuss how we can meet your specifications.)

Feature on "LITE"

With WinROOF2021 Lite, the manual image measurement and the camera integration function such as focus composition are available at reasonable prices. This function is also available in WinROOF2021 Standard.

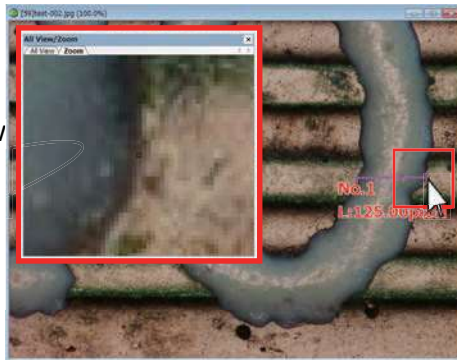
Various Manual Measurement Tools



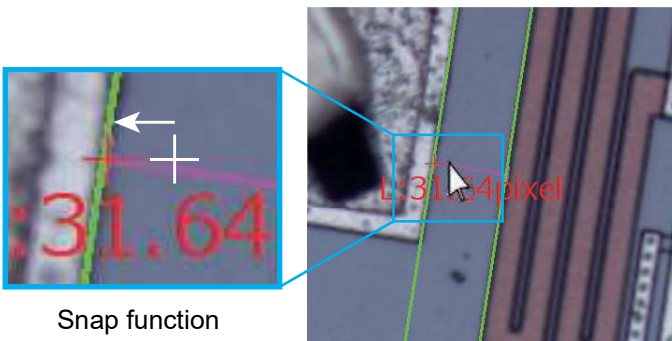
This software is equipped with setting function of coordinate system of objects, which enables to measure actual sizes. Manual measurement tools are useful in measuring line length, angle, number count, circle, rectangle, and polygon. Additionally, lines or circles with vague edges are supported by approximate figure measurement.

Measurement Assist Function

Magnified view

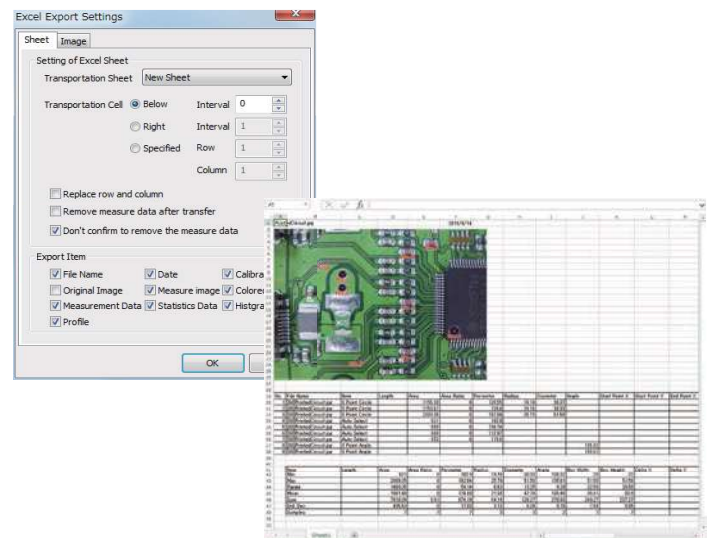


A zoom screen that magnifies the position of the mouse cursor can be displayed. By turning mouse wheel, the digital zooming that position at any are available. When manual measurements, the function that the measurement point will automatically fit to the mouse cursor when moving the mouse cursor closer to the edge is also implemented.



Excel® Export

You can export the results of measurement and processed images to Excel by means of a single click. A new Excel book can be opened and transferred, a continuous transfer to the active sheet can be made, a new sheet can be created and transferred, and the destination sheet or cell can be specified. Also, you can make fine settings such as the existence or non-existence of images, measurement data, statistical data, etc.





Metallic materials/ Material manufacturing



Construction · Business related to road



Oil · Coal · Chemical Industry



Food manufacturing



Life · Pathology · Clinical/Research



Electrical parts/ Circuits · Precision machine Manufacturing

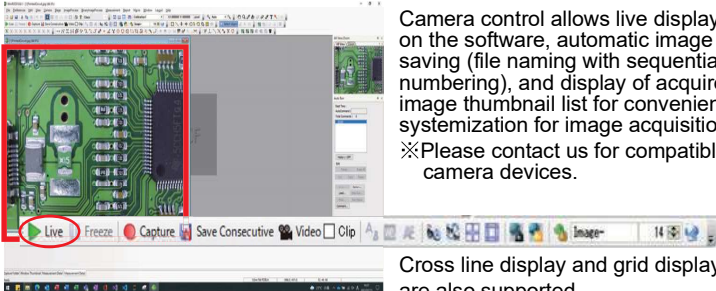


Plastic · Rubber product manufacturing



Paper · Pulp manufacturing/ Publications · Printing

Camera Control · Scale Setting



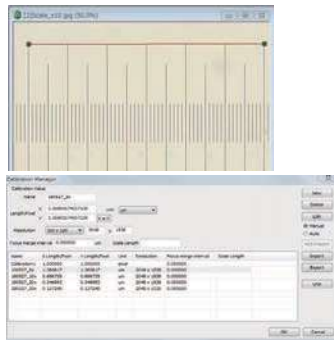
Camera control allows live display on the software, automatic image saving (file naming with sequential numbering), and display of acquired image thumbnail list for convenient systemization for image acquisition. ※Please contact us for compatible camera devices.

Cross line display and grid display are also supported.

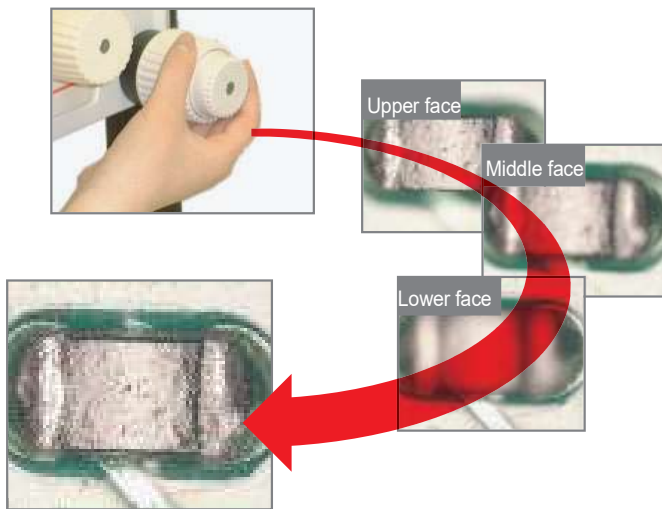
Calibration registration Scale display

You can register calibration patterns with comments for each magnification, so if there are multiple imaging devices you can make a selection without error.

You can also create an image into which a scale bar has been inserted, even if the image was photographed using a different imaging device.

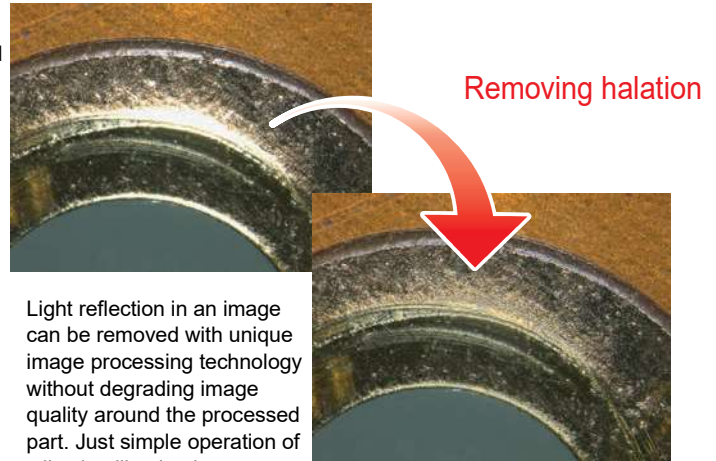


Focus Composition



This function provides an image with long focus depth when an image is out of focus. Just simple operation of turning a microscopic focus adjustment dial easily produces all-focused images.

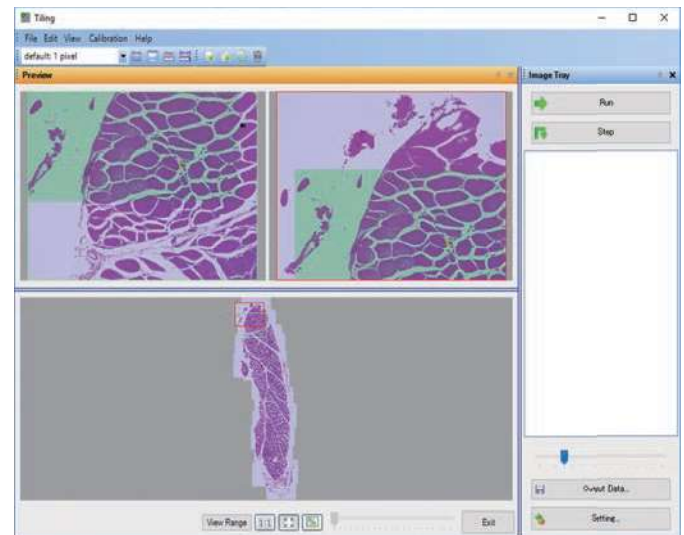
Halation Removal · HDR Composition



Light reflection in an image can be removed with unique image processing technology without degrading image quality around the processed part. Just simple operation of adjusting illumination or camera exposure immediately produces optimum images.

* Please contact us for compatible devices.

Image Tiling



Tiling function is effective for acquiring an image with both wide field and high resolution. Moreover, it is equipped with shading correction function, which obtains highly accurate tiling.

WinROOF2021 Function Comparison Table

Function	WinROOF 2021 Standard	WinROOF 2021 Lite
Image saving • Save function		
Image loading(.bmp, .jpg/.jpeg, .tif/.tiff, .png, etc)	○	○
Image saving(.bmp, .jpg, .tif, .png, etc)	○	○
Image cropping(.bmp, .jpg, .tif, .frn)	○	○
Image saving with sequential number(.bmp, .jpg, .tif, .frn)	○	○
Camera • Microscopes • Motorized XYZ axis control function *1		
Live view/capture(.bmp, .jpg, .tif, .frn)	○	○
Live overlay/capture(.bmp, .jpg, .tif, .frn)	○	○
Live background difference display/capture(.bmp, .jpg, .tif, .frn)	○	○
Interval image capturing(.bmp, .jpg, .tif, .frn) *macro use	○	-
Video recording(.avi, .wmv)	○	○
Captured image thumbnail display	○	○
Lens monitoring (calibration/scale automatic switching)	○	○
Real-time halation removal/HDR synthesis	○	○
Real-time focus composition	○	○
Z-axis controlled motorized focus composition/Z-axis slice image	●	●
Real-time image tiling	○	○
Motorized XY axis control auto image merging system constr.	●	●
Motorized XYZ axis control auto 3D image merging system constr.	●	●
Display function		
Zoom in/out/automatic display magnification fitting	○	○
Partial magnification zoom window	○	○
Full screen display/2 image split display/4 image split display	○	○
Cross line display/Grid display	○	○
Scale display	○	○
Image component text display	○	-
3D view	○	○
High resolution connected image viewer	●	●
Change screen layout / Save / Load	○	○
Switch between Japanese and English	○	○
Image processing • Measurement range specification function		
Various ROI settings (Short/Circular/Polygonal/Free etc.)	○	○
Save/load ROI	○	○
Image processing • Composite function		
Various edge and smoothing filters	○	○
Brightness/contrast adjustment	○	○
Average brightness correction / Peak brightness correction	○	-
Uneven lighting correction (background quitting)	○	○
Horizontal correction	○	-
Alignment correction	●	-
Lens aberration correction	○	-
2D fourier transform(FFT)	○	-
Image quality improvement (Differential hysteresis)	●	●
Image operations	○	-
RGB separation/RGB composition/Multicolor composition	○	○
Focus Composition	○	○
Halation Removal/HDR composition	○	○
Image tiling	○	○

Function	WinROOF 2021 Standard	WinROOF 2021 Lite
Calibration		
Dimension calibration (manual/auto)	○	○
Intensity (brightness/height) calibration	○	-
Import/export of calibration data	○	○
Manual measuring function		
Various manual measurements	○	○
One-click automatic ext. and meas. (area/area ratio/perimeter)	○	○
Figure-to-figure measurement	○	○
Intensity (luminance/height) profile measurement	○	-
Automatic extraction • Measurement • Analysis functions		
Binarization/Multi-valued/Color extraction	○	-
Automatic binarization/Automatic multi-level	○	-
Various morphology	○	-
Watershed (particle analysis)	○	-
Pen/Eraser tool	○	-
Batch release by measurement value	○	-
AI class classification	●	-
Shape feature measurement/Total area and number measurement	○	-
Intensity (brightness/height) measurement	○	○ (Brightness only)
Automatic processing macro	○	-
Particle size data analysis	○	-
Automatic imaging and analysis system construction *2	●	-
Digital I/O control *2	●	-
Technical measuring function		
Inter-particle measurement function	○	-
Voronoi separation measurement	○	-
Circular shape separation measurement	○	-
Automatic line width measurement	○	-
Grid measurement (Grid ROI)	○	-
Multiple area analysis (Mask ROI)	○	-
Needle particle separation measurement	●	-
Ring thickness measurement	●	-
Non-metallic incl./Graphite sphericity/Grain size meas(Material OP)	●	●
Metal grain boundary separation measurement	●	-
3D measurement / Roughness measurement	●	● (Optional feature)
Result output • Judgment • Statistical value display • Printing		
Save/Load images after measurement	○	○
Particle image output(.bmp, .jpg, .tif, .png)	○	-
Save(.dxf, .efig)/Load measurement figures(.efig)	○	○
Save/Read Measurement Results	○	○
Excel® transfer *Excel® needed	○	○
Create frequency distribution table/Histogram/Particle color map	○	-
OK/NG judgment output	○	-
Normal Image Print / Specified Mag. Print / Multi Image Print *2	○	○

○ : Standard function(Some functions are added to standard.)

● : Optional functions - : Not equipped with function

*1. There are functional limitations depending on the supported camera / Digital microscope/Optical microscope/Motorized XYZ control device, etc. Please contact us for details

*2. Please inquire separately about supported hardware.

Support Pack Maintenance

The support pack is intended to be used by the customer with peace of mind. To enable the customer to use this software more easily and with peace of mind, we can provide [Software Maintenance Service] for a fee. We do not only sell software, but also offer services which utilize our software. For this reason, we are aiming to join forces with the customer to enable the software to exhibit maximum performed during actual work, and thus enable various issues to be resolved.

Maintenance Item	Contents	
Software version upgrade	We always offer products that are compatible with the latest technology and the latest OS environment. Note that we offer free of charge all upgrades released within the contract period.	<p>* The environment setting fee, operation guidance, and other fees are not covered by this service.</p> <p>* Our services are only provided domestically in Japan.</p> <p>* Applicable only to the function range of the WinROOF2018. The Automatic Processing Macro must be corrected.</p> <p>* The maintenance period is one year.</p> <p>* We are open between 9:30 AM and 12:00 AM JST and also between 1 PM and 5 PM JST from Monday to Friday (We are closed during public holidays and weekends, summer holidays, and end-of-year and New Year holidays.)</p>
Technical support by telephone and e-mail	We always respond promptly and accurately to questions from the customer.	
Analysis diagnostic service	Based on the image received from an actual customer, we as professionals can make a judgment regarding what kind of process is optimum, and also offer you a report and other information.	
Protection key guarantee	If your protection key breaks, we will replace it at no charge. (Once a year only)	

Operating environment

- OS: Windows 10 (32/64bit)
- Language: Supports Japanese/English
- Memory: 4 GB (32-bit), 8 GB (64-bit) or more
- CPU: Equivalent to Core-i, 2.0 GHz or more
- Recommended: DVD-ROM drive
- Display: Full-color 1280 × 1024 or better
- USB port: One unused port

● Developed by



MITANI CORPORATION

MITANI CORPORATION, Visual System Department

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材料固化測試儀器 表面形貌量測儀器

影像尺寸缺陷分析儀器 熱物性測試儀器

<https://www.mitani-visual.jp> (Downloading demonstration software is available)

*Constitutes the contents for June 15, 2021. The specification, price, and design are subject to change without notice.

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