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IR MEMS INSPECTOR Training

What is IR MEMS INSPECTOR ?

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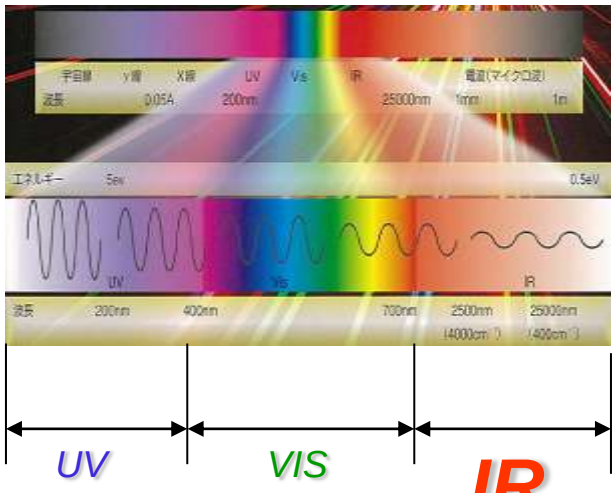
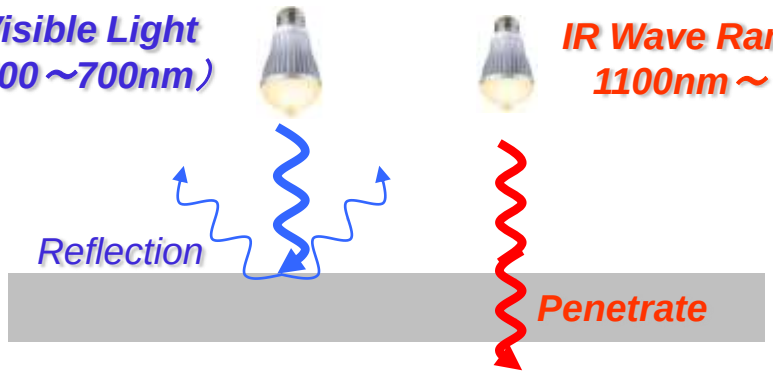
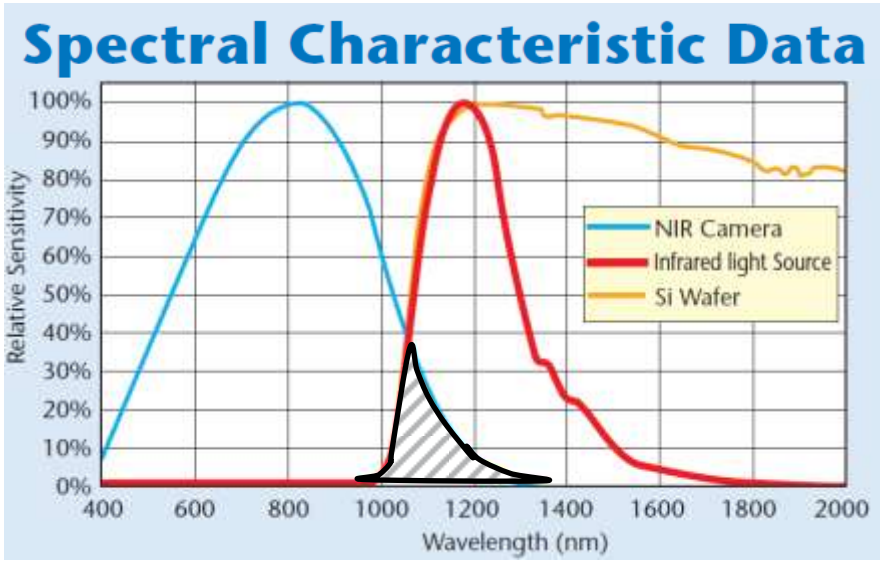
What is IR MEMS INSPECTOR ?



Visible Light
(400～700nm)

IR Wave Range
1100nm～





IR Light can penetrate through Si Wafers.

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IR MEMS Inspection
Advanced Human inspection system

Full Automated Inspection

Serial production stage

High throughput

Low spec.

High spec.

Semi Automated Inspection

Pre-processing stage

Low throughput

Human Inspection

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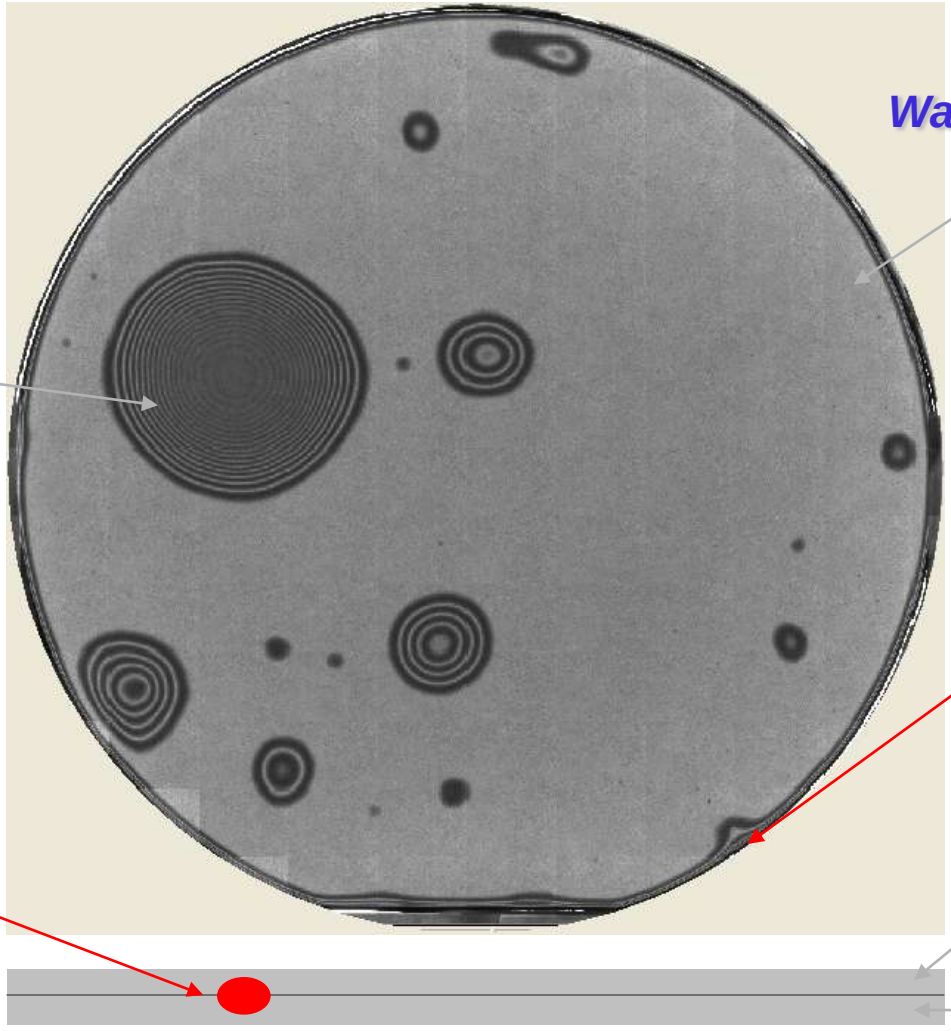
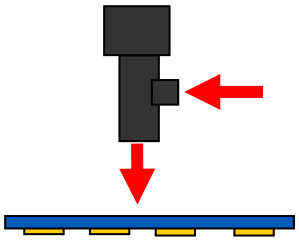
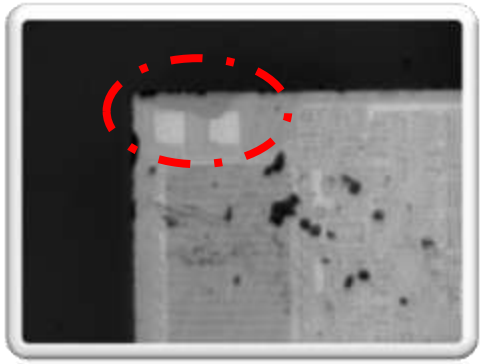
Inspection for defects inside bonding wafers



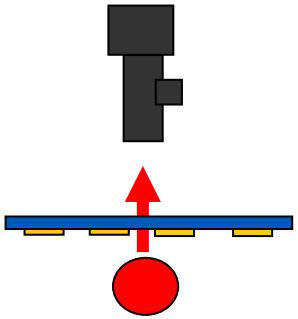
Different image depending on illumination

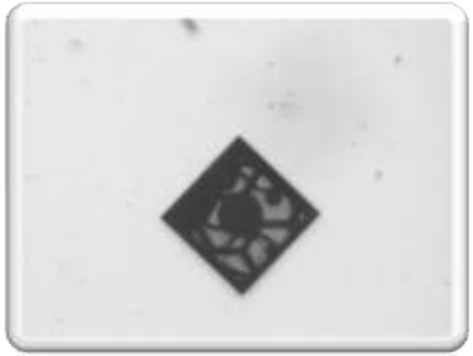
IR Coaxial





IR Backlight





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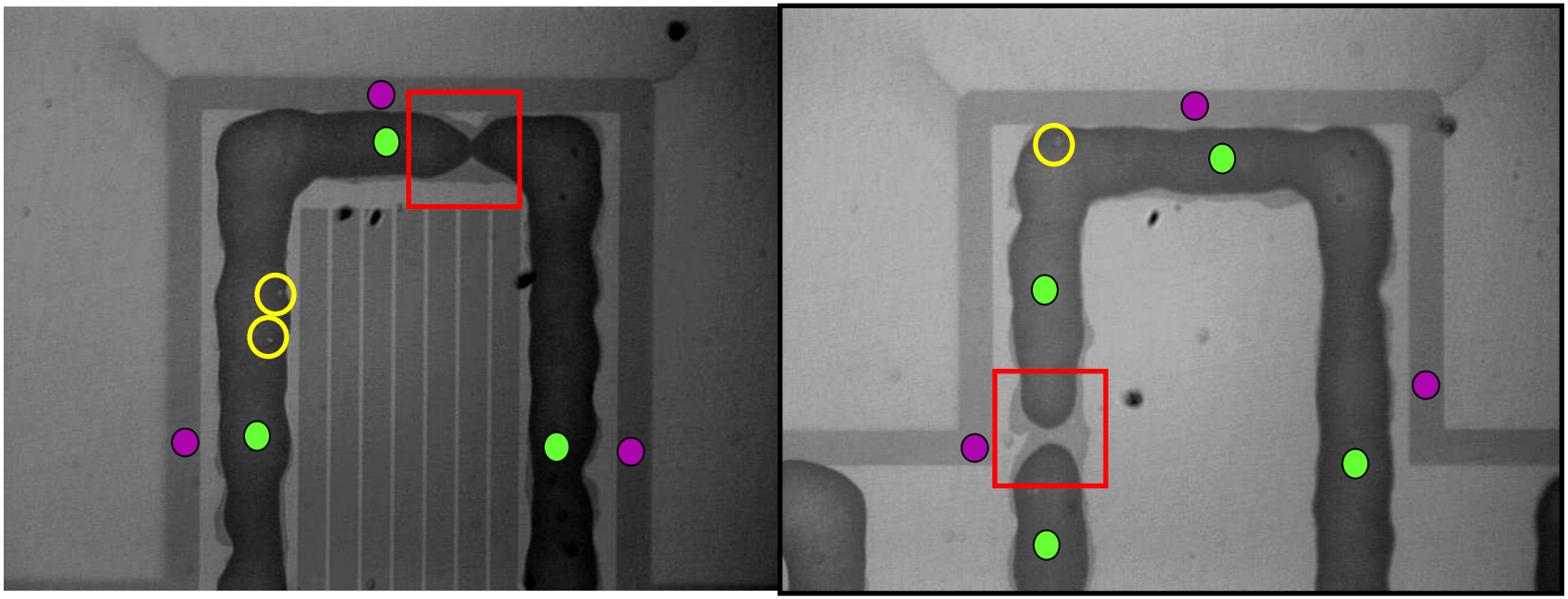
Glass Frit Bonding Imaging - Image Sample -



Bonding Frames

Glass Frit Bonds

Seal Integrity Defect

Seal Void Defect

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Main features

Main features : Appearance

Front side

Cover for lens adjustment

Note: Keep this cover closed during normal use. Open only to perform maintenance. Attempting to use the system while the cover is open will trigger the safety switch, and the system will not work.

Cover for sample removal

Note: See Section 3-1-2 for instructions.

Figure 3-1-1: Front of system

①: Power indicator
②: Low-magnification indicator
③: High-magnification indicator
④: Interlock indicator

Main features : Appearance

Rear side

Use this USB port to connect the USB cable to the control computer's USB port.

Power inlet

Power connector

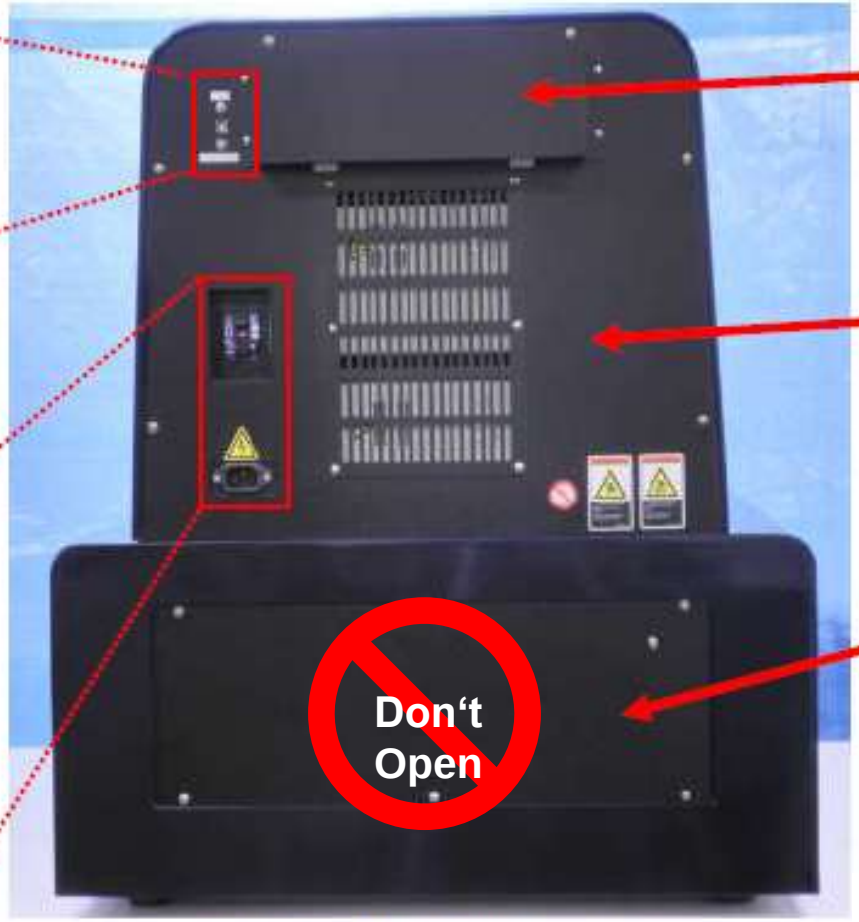


Figure 3-1-3: Rear side of the system

Exhaust fan

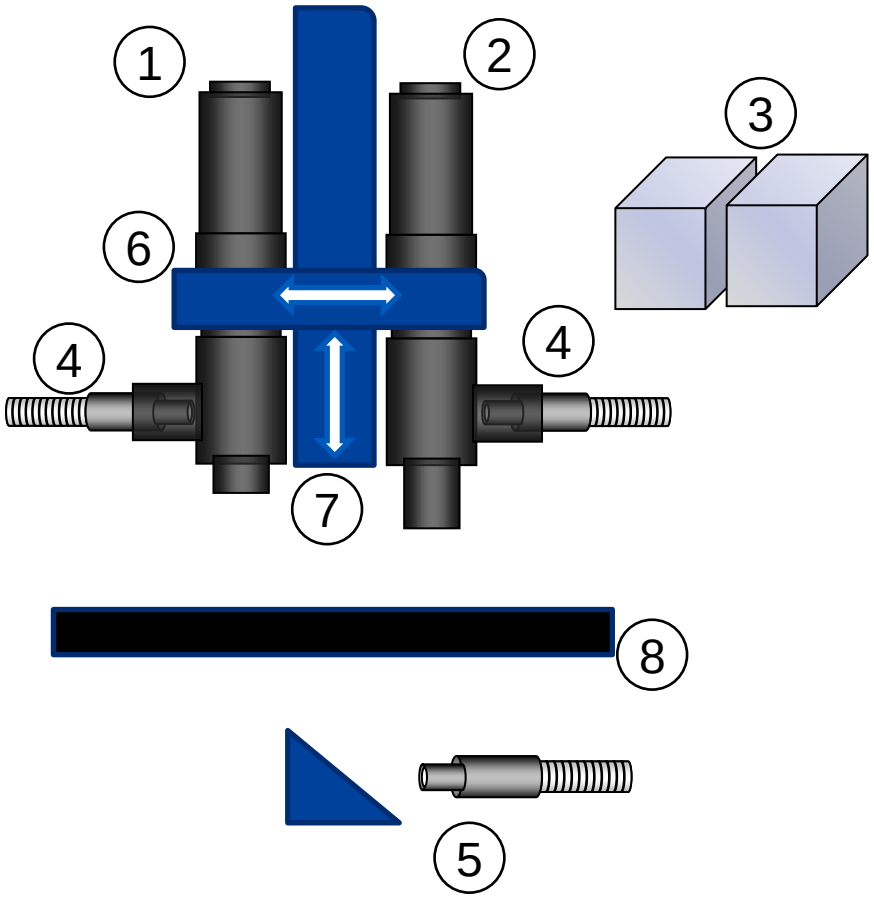
Cover for halogen bulb replacement

Cover for inspection on rear side

Note: Keep this cover closed and in place during normal use. Open only to perform maintenance.

- Power inlet
- Power connector
- USB port for PC
- Halogen bulb replacement cover

Main features : Optical system



Basic system

1. Low-Mag. Zoom unit
2. High-Mag. Zoom unit
3. NIR halogen LS
4. Coaxial Lightguide
5. Backlight unit
6. Camera stage
7. Z-stage
8. XY-stage

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Main features : Screen Pictogram and Navi.

Pictograms and Navigations	
1)	File menu
2)	Lens & Illumination control
3)	Area map & stage control
4)	System utilities
5)	Operational control
6)	Image display
7)	Navigation functions
8)	Navigation screen
9)	Image coordinates
10)	Field of View
11)	Magnification

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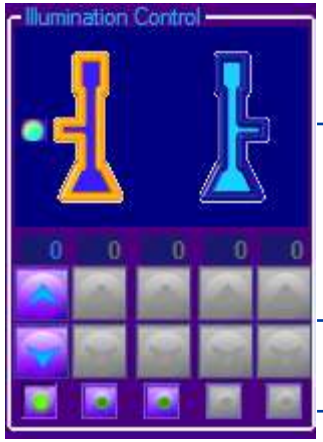
Main features : Screen Pictogram

Lens & Illumination



Zoom select
- Low mag. zoom
- High mag. zoom

Illumination control
- Intensity control
- On/off

Illumi. for High mag.zoom
- Coaxial
- Ring light (Optional)
- Backlighting

Illumi. for Low mag. Zoom
- Backlighting
- Ring light (Optional)
- Coaxial

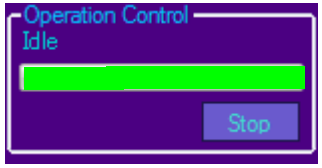
XYZ Stage

Zoom lens
- Z position
- FOV range

XY table
- Area map
- Unloading
- Loading to center position
- Moving to specific coorinations
- Specifying the origin
- Moving to the origin

Cross line generation

Operational control



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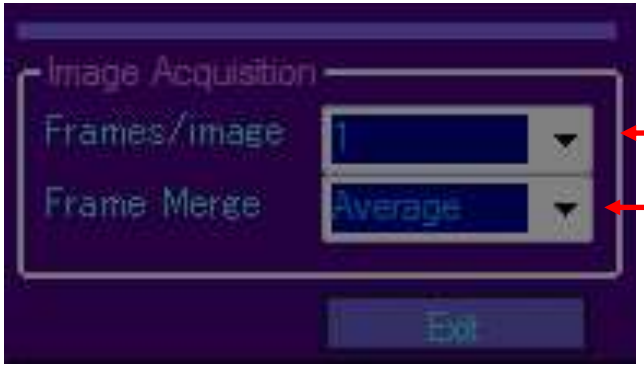
Main features : Screen Navigations

1.Camera contol

- Gain
- Exposure
- Black

2.Image integration & Averaging



- Select “Average“ or “Additive“
- Select “Frames“

3.Enhancement parameter

- Emphasize Dark
- Emphasize Bright
- Emphasize entire image

1 2 3 4 5

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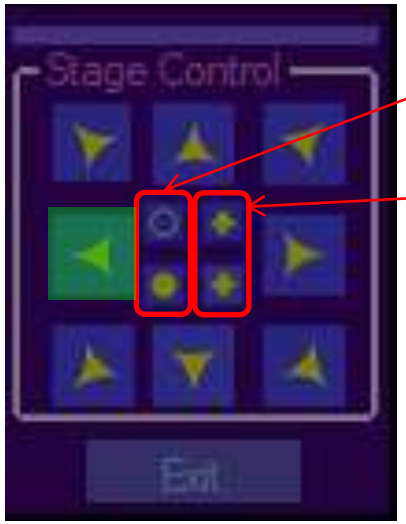
Main features : Screen Navigations

4.Jog movement



Zoom

Z Focus

5.Step movement

Z Focus

X um

Y um

Z um

1 2 3 4 5

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Main functions

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Main Functions

- 0. Live mode
- 1. Image Enhancement
- 2. Uniformity correction
- 3. Area & dia. measurement
- 4. Distance measurement
- 5. Stitching
- 6. Refining
- 7. Snap shot (Optional)

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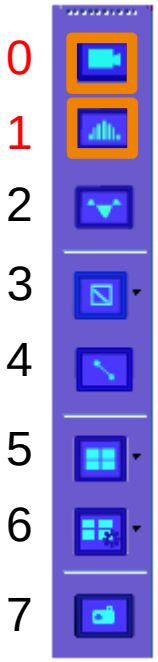
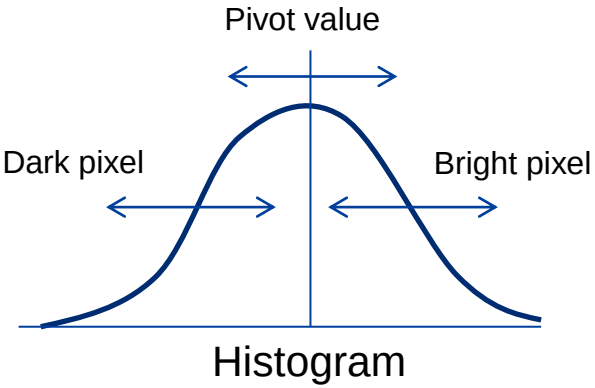
Main functions : 1. Image Enhancement



→ Emphasize Dark pixel

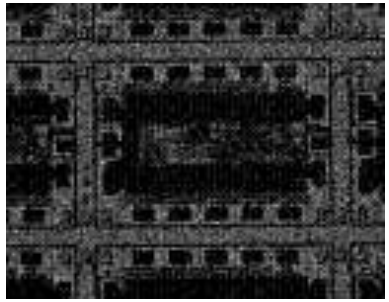
→ Emphasize Bright pixel

→ Shift Pivot value

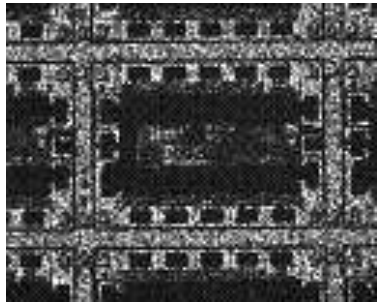


Original image

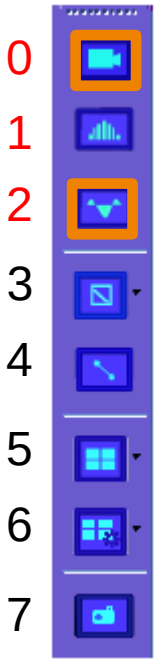
Emphasize Dark pix.



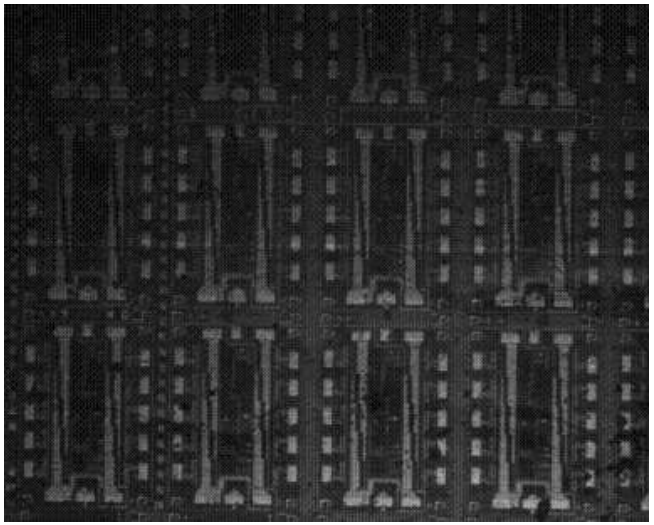
Emphasize Bright pix.

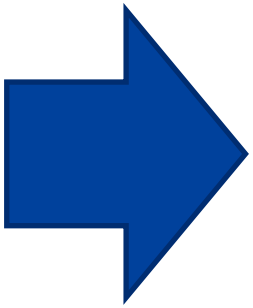


Main functions : 2. Uniformity correction by Smoothening

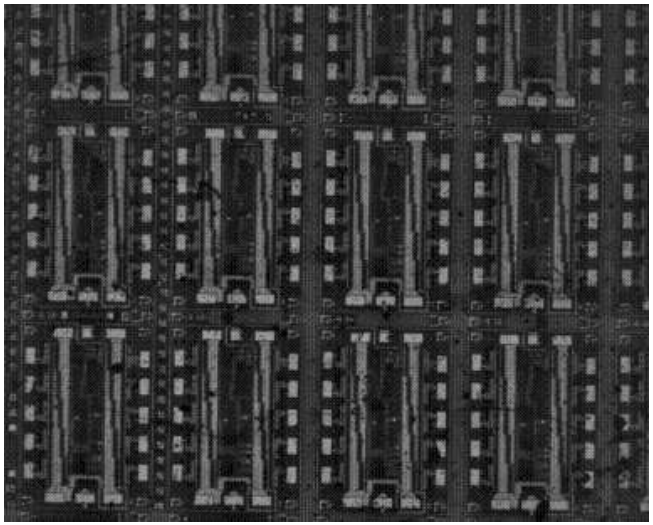


Live image





Uniformity correction



Equalization processing

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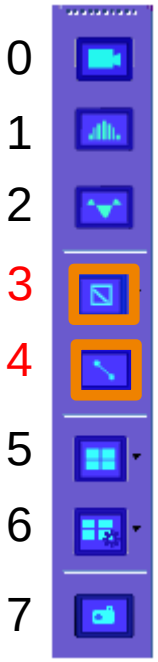
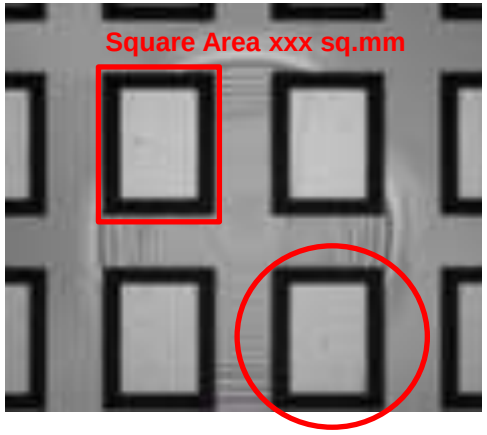
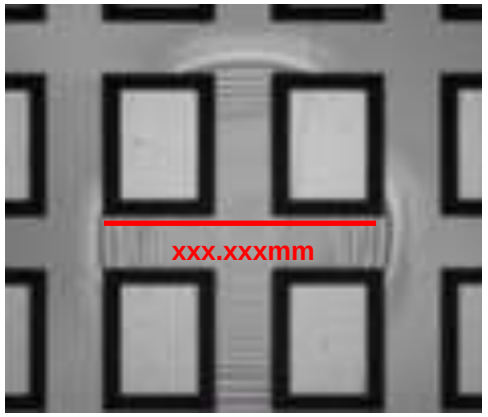
Main functions : 3 & 4 Measuring



3. Square area
   Diameter of circle



4. Distance



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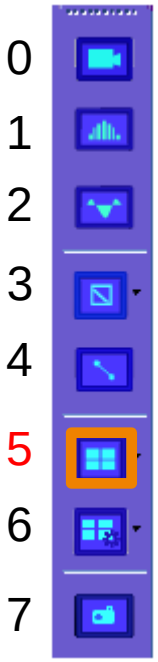
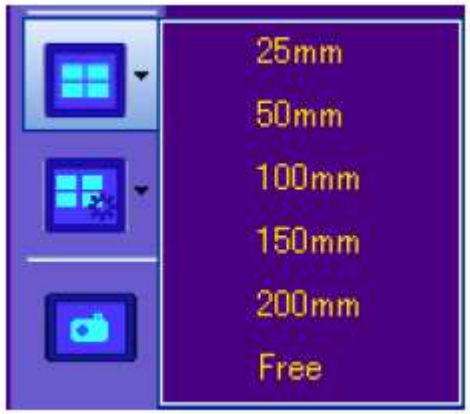
Main functions : 5. Stitching

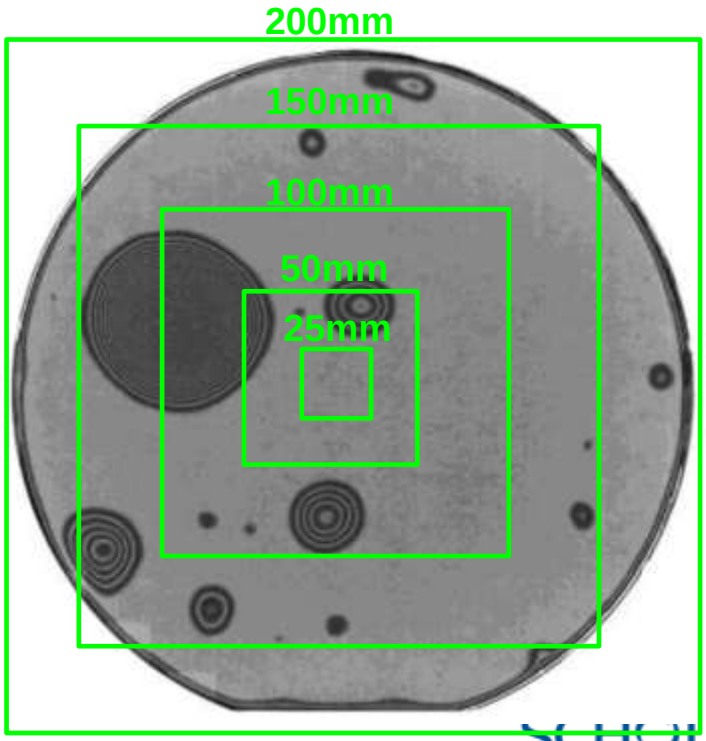
Overview scan mode



***Scan area is from center to 200mm wide**
x0.75 to 4.5x mag. is possible



Scan Area 200mm²		
Mag.	0.75x	4.5x
Tact time	<4 minutes	<104 minutes
Scanning	720 images	23,120 images



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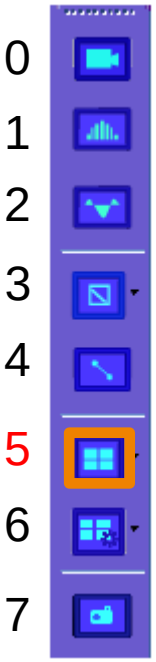
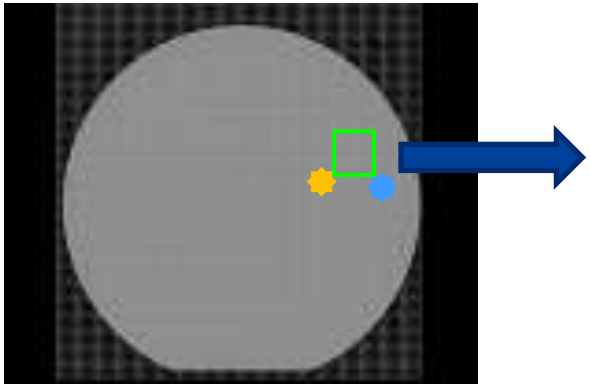
Main functions : 5. Stitching

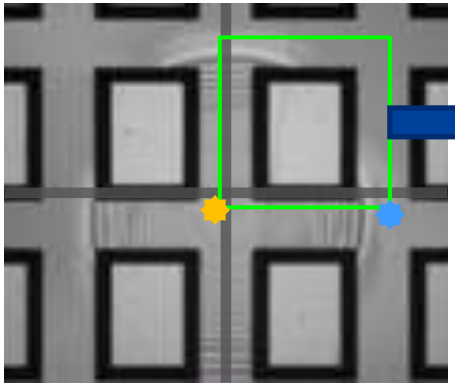
Overview scan mode



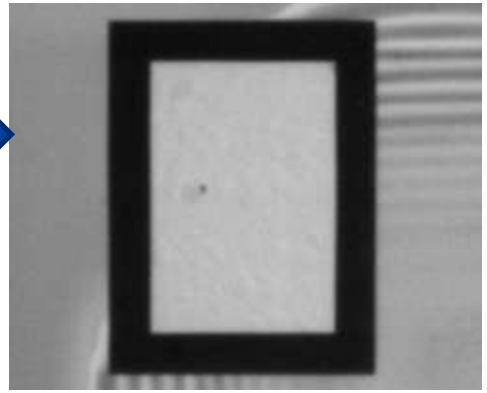
To zoom in
Select an area and scan again up to 1 scan.

23,120scan @ 4.5x
Scan area: 200mm





1 scan @ 4.5x
Scan area: 1mm



Right-click after scanning

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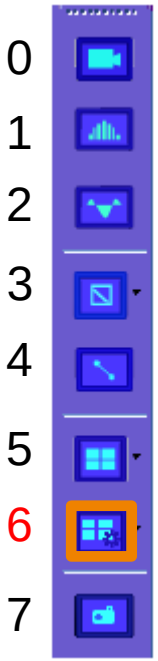
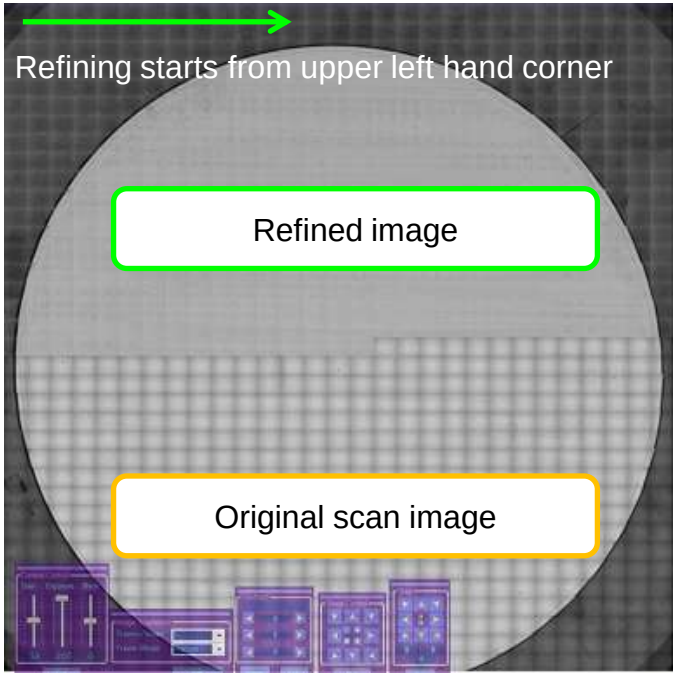
Main functions : 6. Refining by smoothening

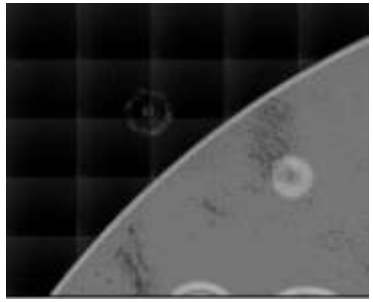


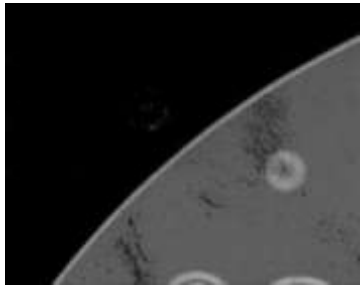
Refining

Right-click after scanning



Gray scale transformation





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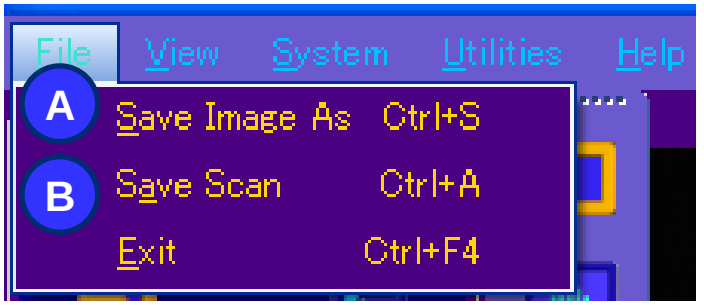
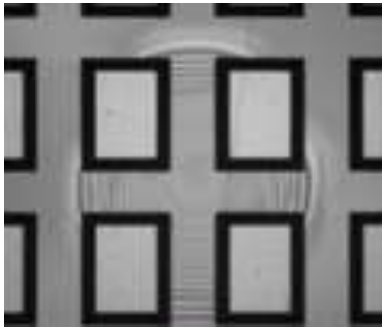
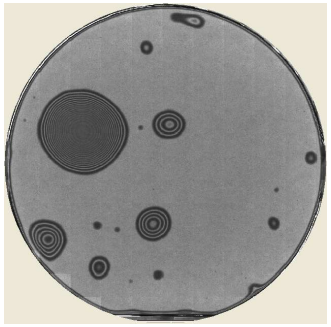
Save the image



A: Save Image
Live image



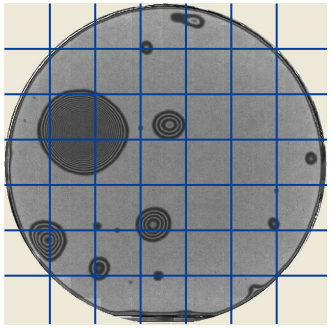
Scaned image as one image



1024x1280 Pix.
- BMP 1.25MB
- JPEG 20~ 90 KB

File > Save image as >

B: Save Scan
All of scanned original images



Scan Area 200mm²
0.75x : BMP 901MB / JPG ~66MB
4.5x : BMP 34GB / JPG ~2.4GB

File > Save scan

Lets operate the machine!!

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