

OLYMPUS®

Your Vision, Our Future

**INFRARED MICROSCOPE SYSTEM
FOR SILICON INTERIOR INSPECTION**

Nondestructively inspects the interior of
silicon devices



Near-Infrared microscope which can observe the interior with high resolution by using infrared technology to look through the silicon like transparent glass

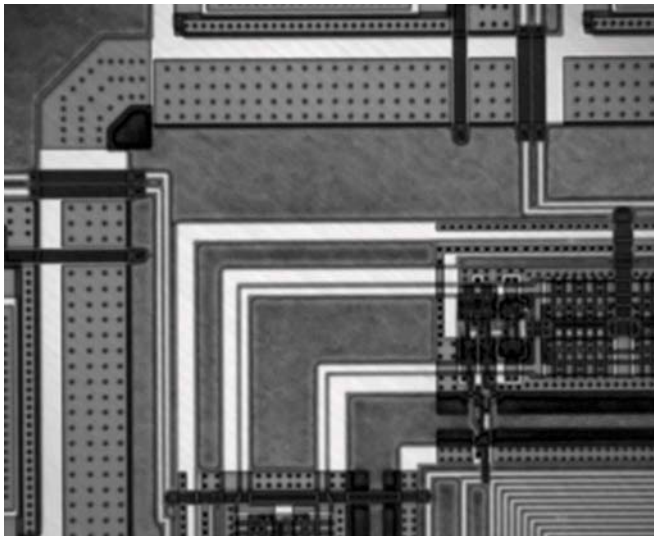
Nondestructive interior observation of silicon wafers, IC chips, MEMS, and various other semiconductor devices

Packaging technology of semiconductor devices is rapidly advancing together with the increase in the need for thinner and smaller electronic devices.

If an infrared microscope is used, SiP (System in Package), 3-dimensional mounting, CSP (Chip Size Package), and other regions which cannot be seen visually can be inspected and analyzed nondestructively.

Olympus offers maximum resolution in inspection and analysis of the latest packaging technology.

Flip Chip Observation



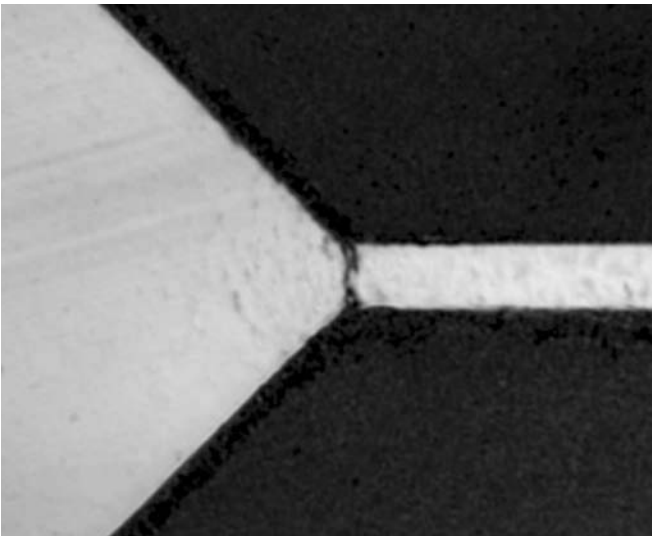
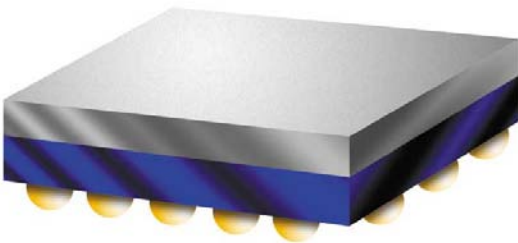
Flip chip mounting nondestructive defect analysis

In flip chip bonding, after mounting the bonding part, the pattern cannot be inspected with visible light. However, with an infrared microscope, the silicon chip can be seen through and the interior can be observed without destroying the mounted chip. Defect analysis is easily performed by merely placing the device under the microscope. Also effective in identifying the positions which should be processed by FIB (Focused Ion Beam).

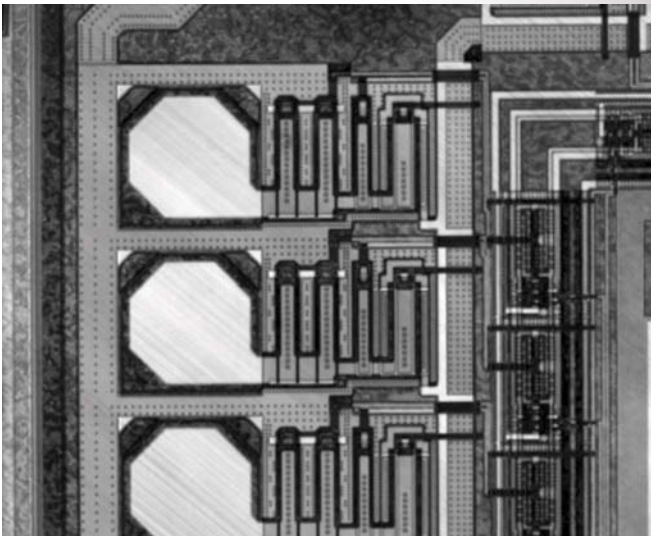
Wafer Level CSP

Chip damage caused by environmental testing during development

Device changes during heat test and moisture test can be inspected nondestructively. Leakage due to melting and corrosion of copper wiring, peeling of resin parts, etc. can be positively observed.



Silicon Gap Measurement



Chip gap measurement

Three-dimensional mounting chip gap can be nondestructively measured by the amount of movement of the objective when infrared light is passed through the silicon and focused on the chip and interposer. This method can also be used in the measurement, and of the hollow construction of MEMS.

Wafer Grinding

Wafer grinding measurement

The thinning of devices increases the need for measurement of both sides of the wafers. However, measuring the grinding amount of both sides of laminated wafers in the wafer grinding process was extremely difficult. The infrared microscope can focus on the front and back of the wafer, and the grinding amount can be measured by means of the amount of Z movement of the objective at that time.

Silicon thickness measurement

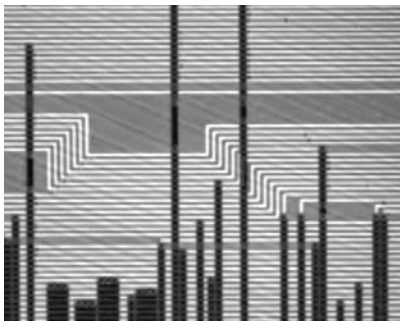
Interior of IC invisible with visible light is observed at an incredibly high resolution

Confocal IR laser scanning microscope
OLS3000IR
LEXT™

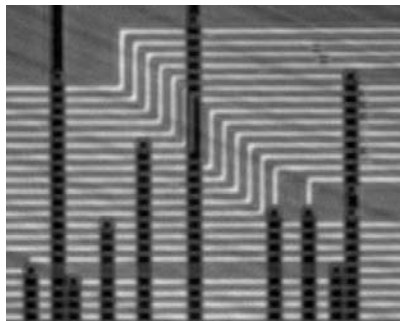


•High resolution near infrared microscopic observation is possible by high power IR laser and confocal optical system
Resolution of 0.55μm line and space pattern

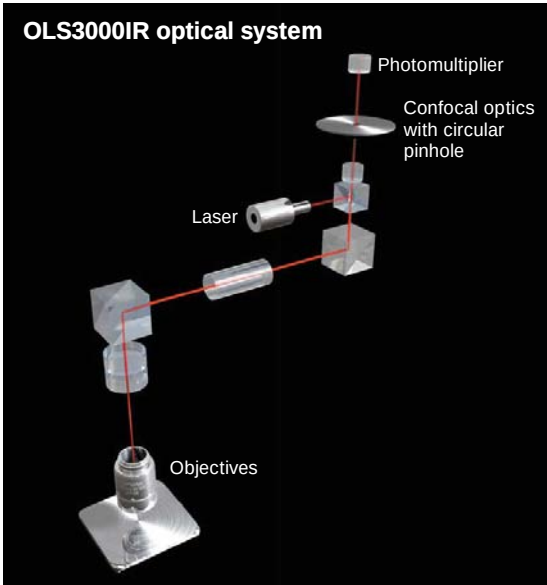
•High precision nondestructive measurement of MEMS gap and silicon thickness by nondestructive height measurement function
Z measurement accuracy: $3\sigma_{n-1}=0.10+0.002L$ μm or less
L=Measurement range (units: μm)



50x image

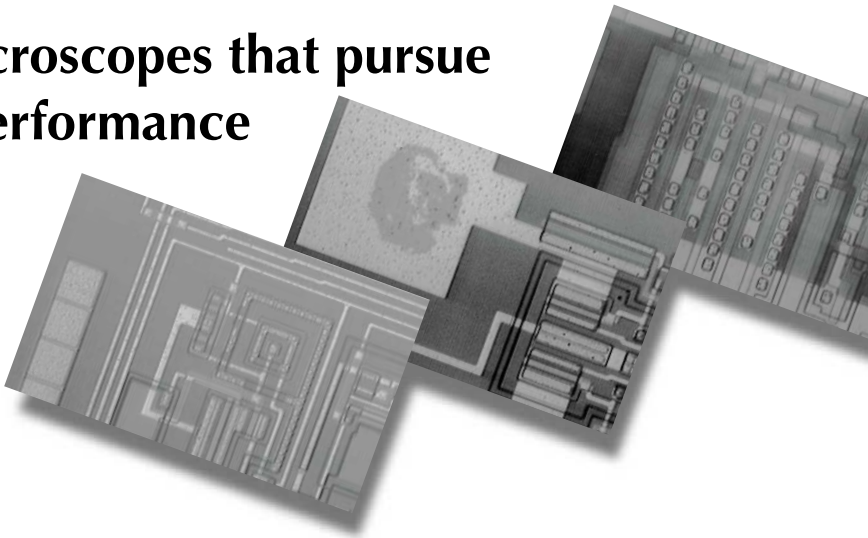


90x image



Line up of near infrared microscopes that pursue high operability and cost-performance

Semiconductor inspection microscopes
MX series



MX series

- Compatible with 150-200 mm wafers
- Superior operability increases semiconductor scanning efficiency
- Motorized revolving nosepiece switches objective to direct
- SEMI S2/S8 compliance and high safety and ergonomic properties secured



MX61



MX51

System industrial microscopes
BX2M series



BX2M series

- General purpose standard type which also allows transmitted near infrared microscopic observation
- UIS optical system with the world's highest level of optical performance
- Y shaped design with advanced ergonomics



BX61



BX51

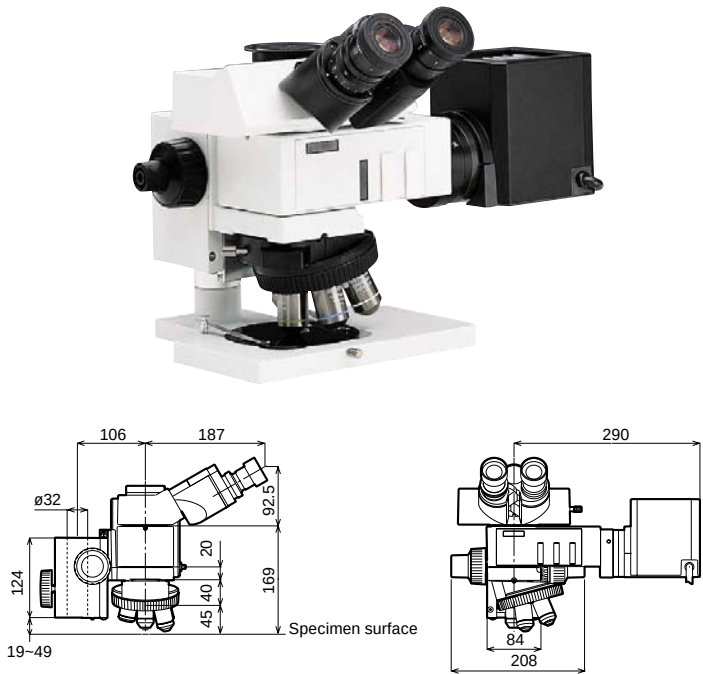


BX51M

Modular optical unit compatible with infrared observation

Infrared region compatible
modular optical unit
BXFM

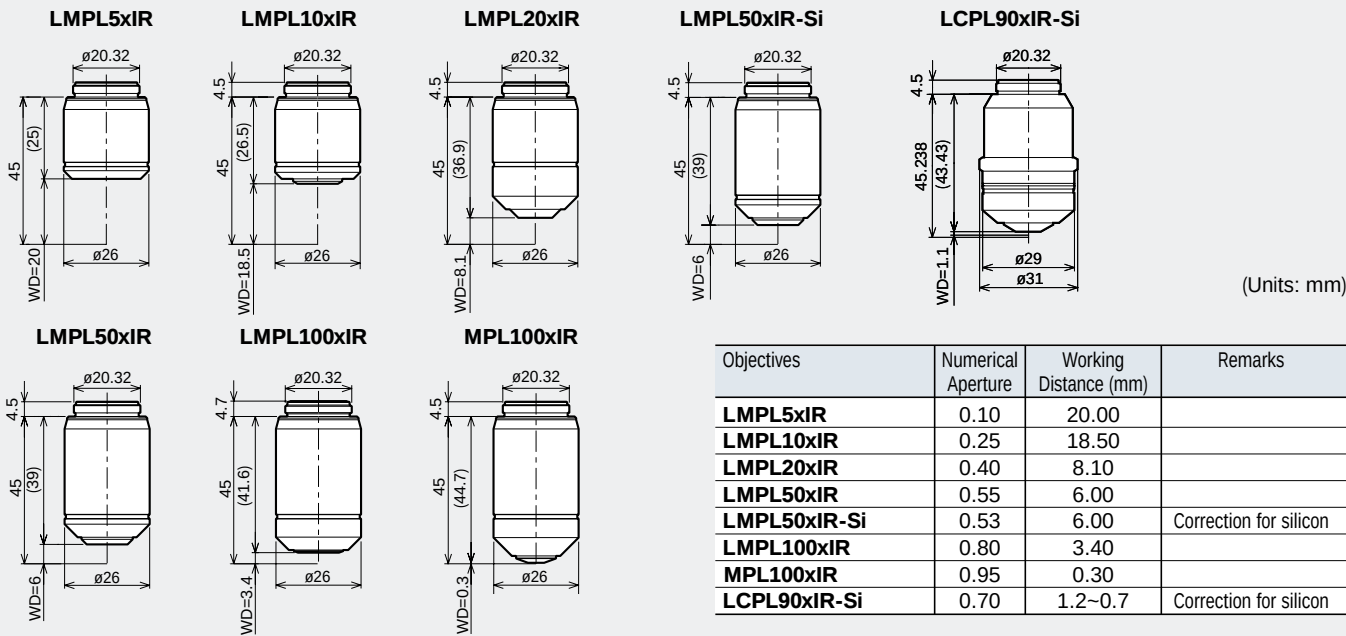
- Optimal U-KMAS reflected light illumination for BF built into the equipment is installed.
- Motorized revolving nosepieces, 100W halogen lamp housing for IR, TH4-100/200 external light sources and other units which allow external control are available.
- UIS optical system without any magnification changes or object degradation even when the distance between the objective and tube lens changes.



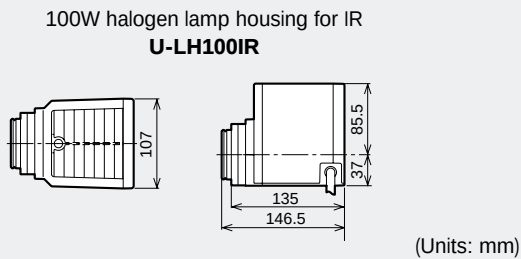
Specifications

Model	Appearance	Infrared confocal observation	Infrared reflected light observation	Infrared transmitted light observation	Z measure-ment	200mm wafer compatibility	Motorized operation	Features
LEX TM OLS3000IR		✓	✓		✓		✓	High resolution observation/ high precision measurement
MX61			✓			✓	✓	Wafer compatible
MX51			✓			✓		Wafer compatible
BX61			✓	✓			✓	Transmitted light observation
BX51			✓	✓				Transmitted light observation
BX51M			✓					Standard
BXFM-S			✓					Equipment oriented

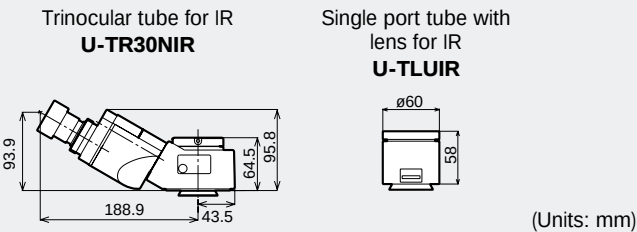
UIS optical system infrared dedicated objectives



Lamp housing



Observation tubes



Others

External light sources/ TH4-100/200
Hand switch/ TH4-HS
Reflected polarizer slider for IR/ U-POIR
Rotatable analyzer slider for IR/ U-AN360IR
Band path filter (1100nm) for IR/ U-BP1100IR
Band path filter (1200nm) for IR/ U-BP1200IR

●OLYMPUS CORPORATION obtains ISO9001/ISO14001.

Specifications are subject to change without any obligation on the part of the manufacturer.



www.olympus.com

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