

IRT-5X

Infrared Microscope



JASCO



Welcome to the Next Generation

IRT-5X offers the enhanced functions: "**Observation**", "**Measurement**" and "**Usability**", providing new innovations in micro IR measurement.

"Observation"

- 5M pixels high-resolution camera
- High-quality observation image by an improved optical system and an electrical iris mechanism
- Auto-focus function as standard
- IQ Monitor for simultaneous visible image observation and IR spectrum measurement
- Various observation options available



"Measurement"

- Powerful mapping measurement with the XYZ auto-stage
- Innovative measurement by IQ Mapping
- Sensitivity enhancement by improvements of optics and midband MCT
- High spatial resolution and high sensitivity measurements by IQ Duo MCT detector
- 4 detectors capability

"Usability"

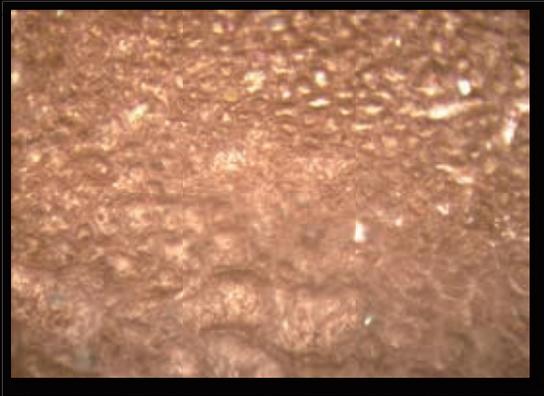
- A simple and easy user interface for beginners
- Auto sample recognition by IQ IR NAV
- Condenser mirror slide-in mechanism
- Reflection measurement available for a 40 mm thick sample
- Reduced installation space requirements



"Observation" enhancement

High-quality observation image and high sensitivity enhancement by newly designed optics

Newly designed optics enables to provide a high quality observation image and a high sensitivity measurement with high throughput. Using a 5M pixel high-resolution camera, a high quality microscopic image is displayed on the PC monitor and recorded in the data file. Electric iris mechanism suppresses stray light, providing high accurate observation image.



X16 cassegrain (without using iris)

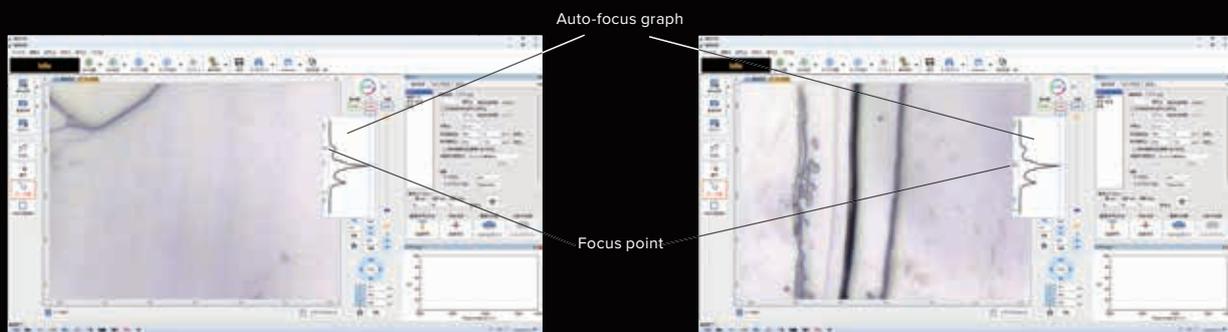


X16 cassegrain (with using iris)

Sample (polyisoprene)

Easy optimization of microscope image

IRT-5X is equipped with auto-focus, auto-brightness and auto-collect functions. All of these functions can be performed with one-click, enabling the acquisition of high-quality images. For samples that may be challenging to focus, such as KBr plates or the diamond anvil cell, the auto-focus function can easily perform this task.



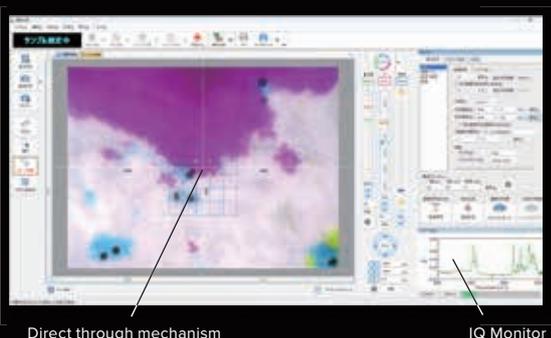
Focus position 1

Focus position 2

Sample (KBr plate sampling of multi layer film of food packing)

A Variety of Monitoring Functions

The direct-through function provides a microscopic image of the area which is obscured by the aperture. IQ Monitor allows the user to simultaneously confirm the sample image and the spectrum for determining the exact measurement point. In addition, polarization observation can be added, allowing the observation of plastics, polymers and fabrics.



Direct through mechanism

IQ Monitor



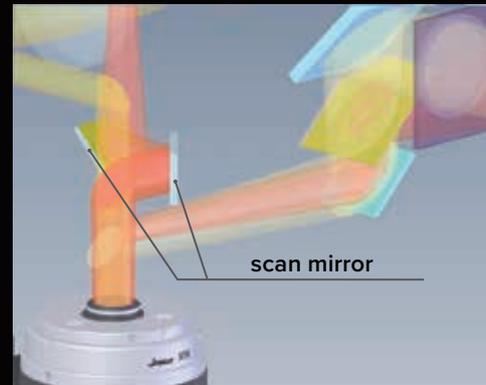
Polarization observation of uniaxial stretching film

(left: conventional observation, right: polarization observation)

"Measurement" enhancement

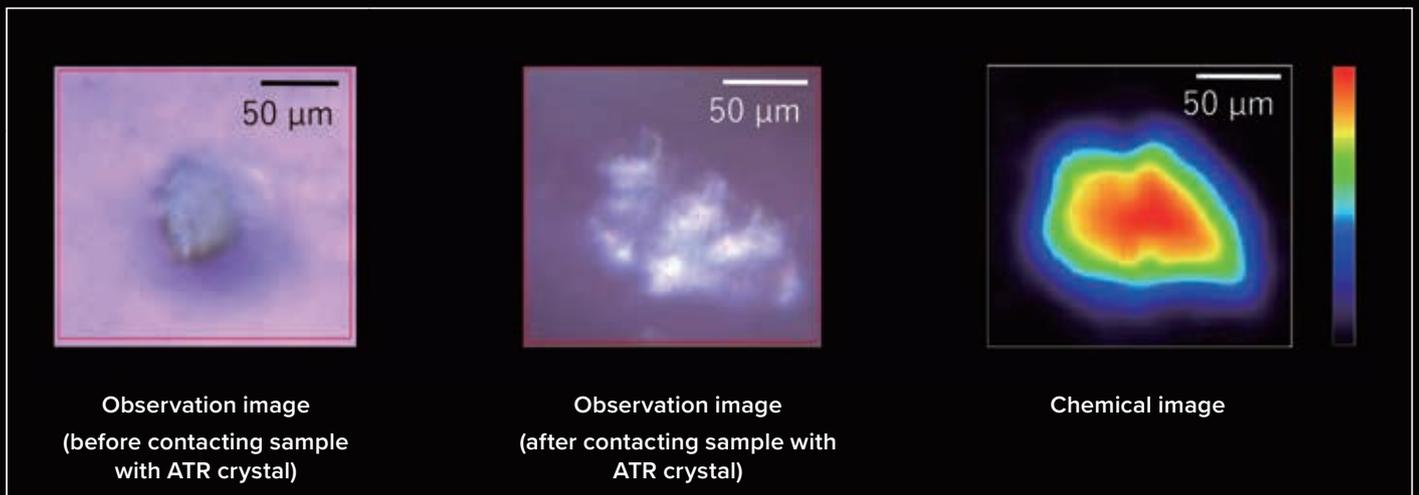
Innovative IQ Mapping technology (JASCO patent)

IQ Mapping uses the same mechanism as the 2D laser scanning function by galvano mirror equipped in laser microscope, allowing transmission/reflection mapping measurement through 2D scanning of infrared light on the sample. Since this function enables to perform the ATR mapping during contact of the sample with ATR crystal, there is no cross-contamination. The ClearView ATR cassegrain (ATR-5X-SD) allows the sample observation while in contact with ATR crystal, enabling point measurements after properly selecting the location.



Overview of IQ mapping

The following pictures shows the ATR mapping measurement results of glitter in cosmetics by using ClearView ATR cassegrain (ATR-5X-SD)

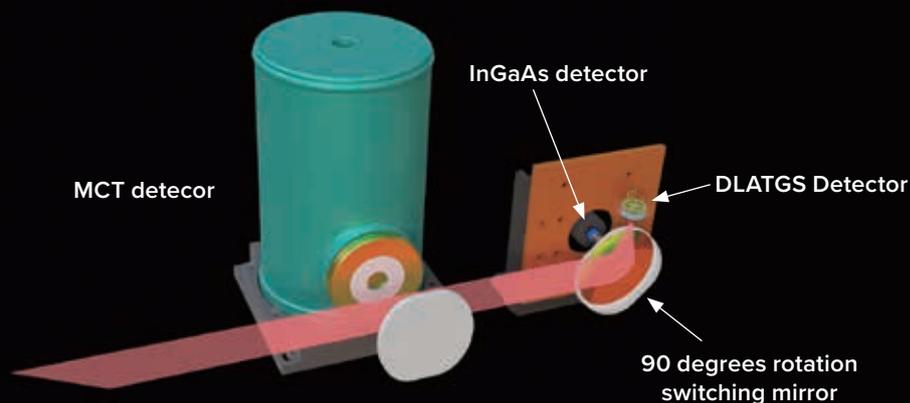


Powerful IQ Duo MCT detector and 4 detectors capability

Standard midband MCT detector can perform IR measurement in low wavenumber range, down to 550 cm^{-1} . IRT-5X supports the simultaneous installation of multiple detectors (up to 4 detectors^{*1}). IQ Duo MCT detector^{*2}, DLATGS detector and InGaAs detector can be installed to IRT-5X and switched by software.

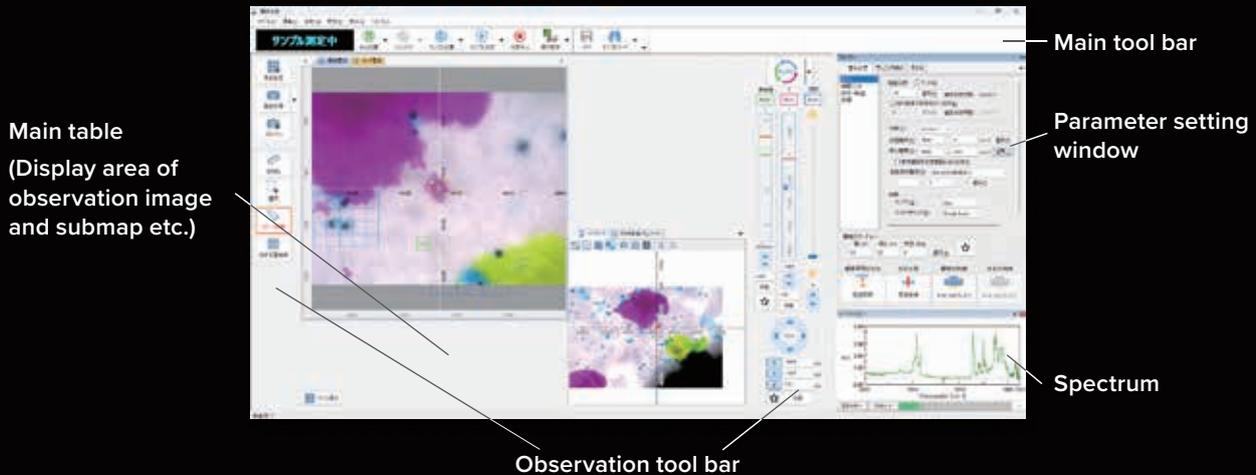
*1: When installing IQ Duo MCT detector, up to 4 detectors can be controlled.

*2: For information about the IQ Duo MCT detector, please refer to page 7.



"Usability" enhancement

Operation improvement by newly designed user-interface of micro measurement program



Newly designed user-interface enables intuitive control of XYZ autostage and allows for easy and clear setting and displaying of the necessary information for micro measurements. In addition, the submap function allows for easy viewing of the entire sample on the stage, enhancing operational efficiency.

Foreign material exploration by measurement support functions



The following functions are available as measurement support function;
IQ IR NAV can recognize the measurement targets from observation image in real-time by image processing technology. It can also register the coordinates of these measurement targets and perform measurements.
IR Advanced Search NAV can filter measurement targets based on specific conditions (such as size and circularity of sample) and display the spectral search results on observation image in real-time.

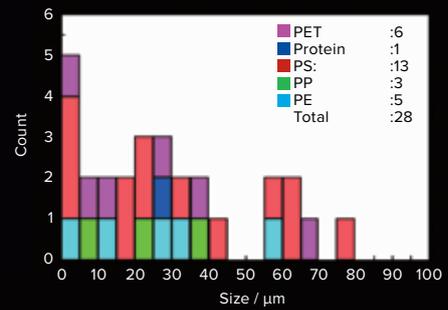
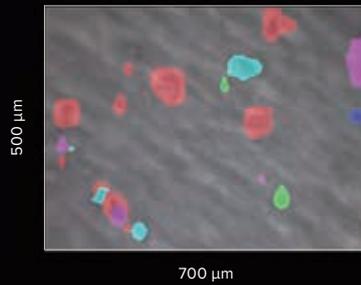
Easy replacement of condenser mirror by slide-in mechanism

Since IRT-5X has a slide-in mechanism to insert the condensing mirror mounting, it is easy to exchange the condensing mirror with one with a different magnification.



JASCO Particle Analysis (standard)

JASCO Particle Analysis can perform various dimension measurements based on the observation image and chemical image information. This program includes statistical processing, allowing the particle size histograms, frequency distributions, correlation distributions and component ratios.



Observation image (left)

Chemical image overlaid on observation image (right)

Particle size analysis

We would like to express our sincere gratitude to TOSOH Analysis and Research Center Co.,Ltd., Japan, for providing the sample.

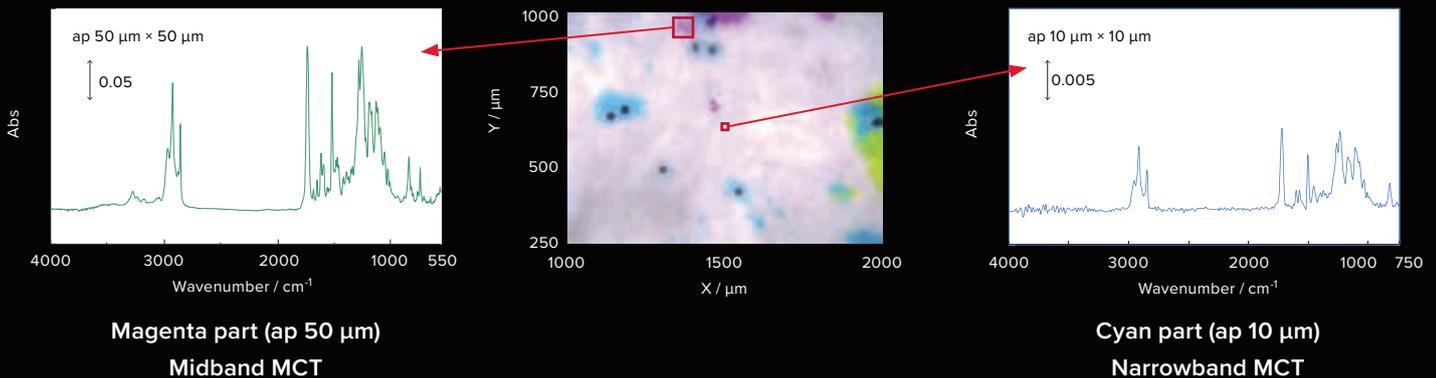
"Option" enhancement

IQ Duo MCT detector

IQ Duo MCT detector has 2 detection elements, midband MCT and narrowband MCT, in the same dewar. Performance of the midband MCT in IQ Duo MCT detector, is similar to a midband MCT detector, but with the advantage that can go down to 550 cm^{-1} . Additionally, narrowband MCT is suitable to perform micro-size measurements. The detection elements can be switched seamlessly according to aperture size.

*When installing IQ Duo MCT detector, standard MCT detector cannot be installed.

Transmission measurement of toner by using IQ Duo MCT detector

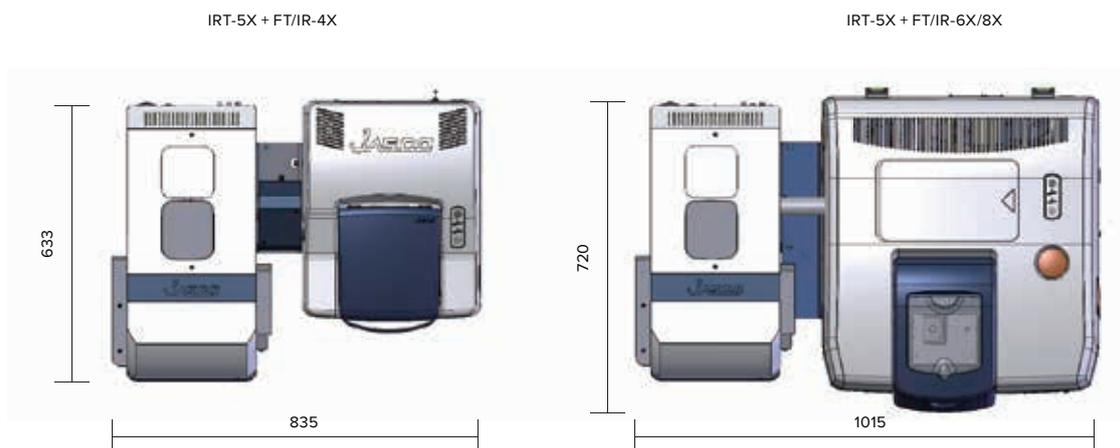


IQ Frame

The combination of XY autostage and IQ Frame enables measurement of the same sample position using IR microscope, Raman microscope, and UV-Visible/NIR microscopic spectrophotometer. Especially, infrared spectroscopy and Raman spectroscopy are complementary, and analyzing both spectra can improve the accuracy of analysis.



Instrument dimentions (unit: mm)



*The installation space for PC and printer is required separately.

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