IRT-5X

Infrared Microscope

JASCO

Performance
Innovation
Reliability

Next Generation

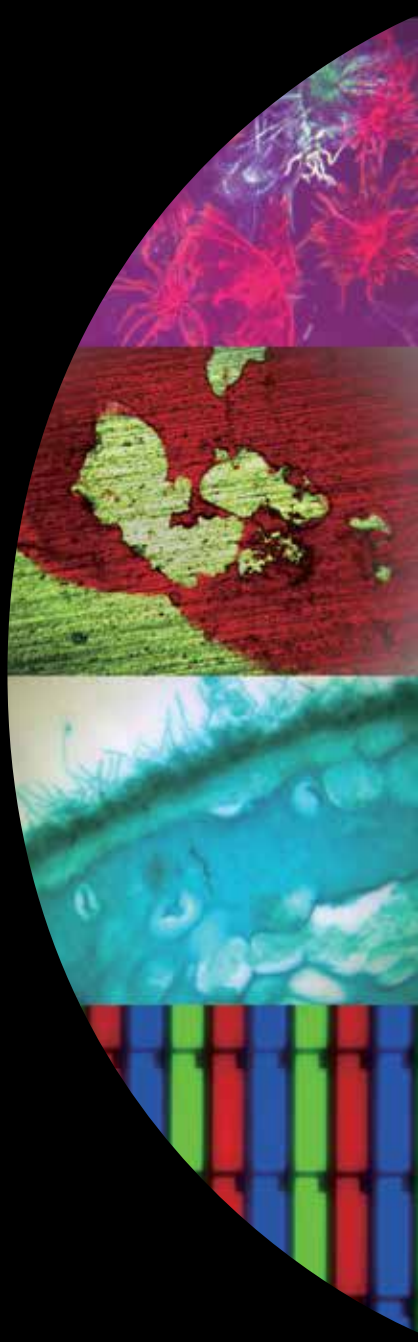
INFRARED MICROSCOPES

IRT-5X

IRT-5X offers enhanced functions providing new innovations in micro IR measurement.

OBSERVATION

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



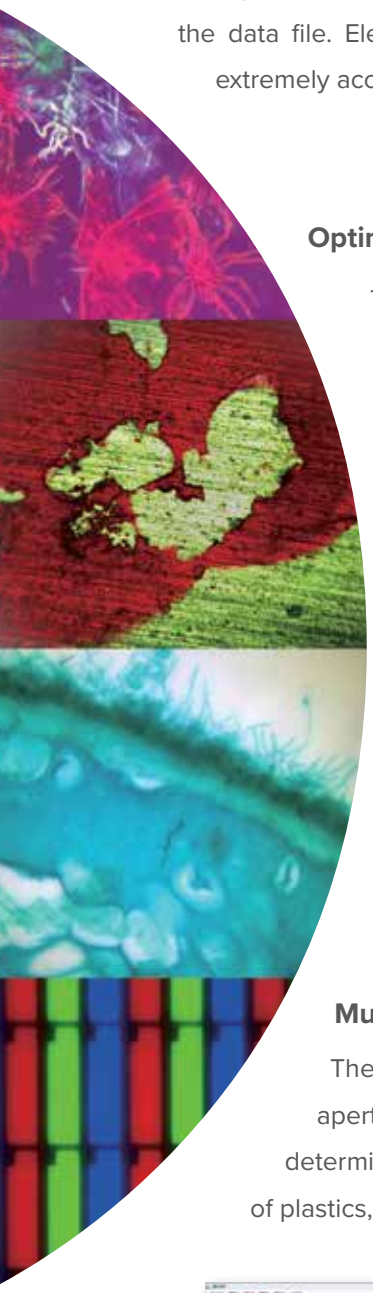
MEASUREMENT

- 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 2-in-1 (Mid and Narrow Band) MCT detectors
- 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
- Compact bench space requirements

OBSERVATION



Enhanced Optics for Superior Observation Image Quality and Sensitivity

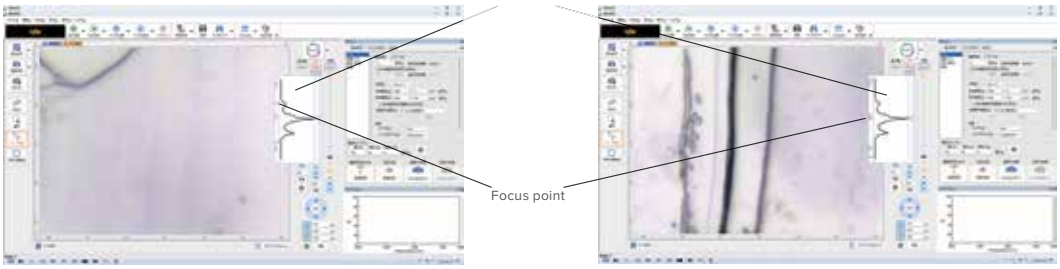
Newly designed optics provide a pinpoint observation image and meticulous sensitivity measurement with high throughput. Using a 5MP camera, a high quality microscopic image is displayed on the PC monitor and recorded in the data file. Electric iris mechanism suppresses stray light, providing an extremely accurate observation image.

X16 Cassegrain

X16 Cassegrain (using iris)
Sample: polyisoprene

Optimized Microscope Imaging

The IRT-5X is equipped with auto-focus, auto-brightness and auto-collect functions, which can all be performed with one click, and result in high quality images. Challenging samples, such as KBr plates or the diamond compression cell, easily become clear using the auto-focus function.

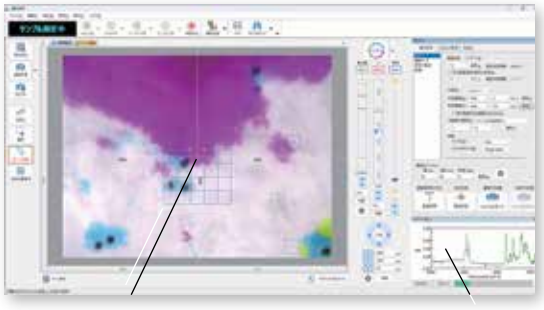


Focus position 1 Focus position 2

Sample: KBr plate sampling (multi-layer food packing film)

Multiple 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 to determine the exact measurement point. Polarization observation can be added, allowing the observation of plastics, polymers and fabrics.



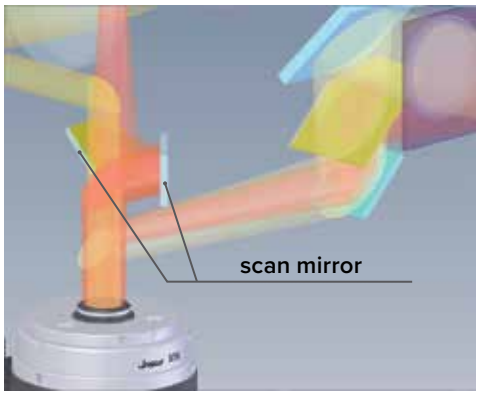
Direct through mechanism

Polarization observation of uni axial stretching film
(left: conventional observation, right: polarization observation)

MEASUREMENT

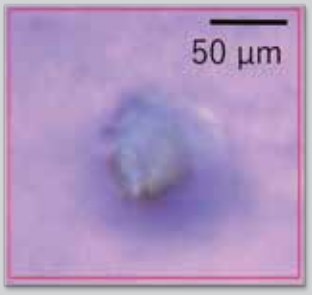
Innovative IQ Mapping Technology (JASCO patent)

IQ Mapping utilizes the same mechanism as the 2D laser scanning function in a laser microscope, employing a galvano mirror to perform transmission and reflection mapping through 2D infrared light scanning on the sample. This function enables ATR mapping while the sample remains in contact with the ATR crystal, eliminating the risk of cross-contamination. The observation-type ATR Cassegrain (ATR-5X-SD) allows real-time sample observation during contact with the ATR crystal, ensuring precise point measurements by accurately selecting the desired location.

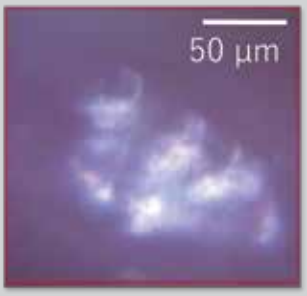


Schematic of scan mirror

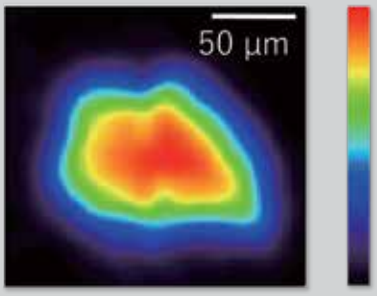
The following images show the ATR mapping measurement results of glitter in cosmetics using ClearView ATR Cassegrain (ATR-5X-SD).



Observation image (before sample contact with ATR crystal)



Observation image (after sample contact with ATR crystal)



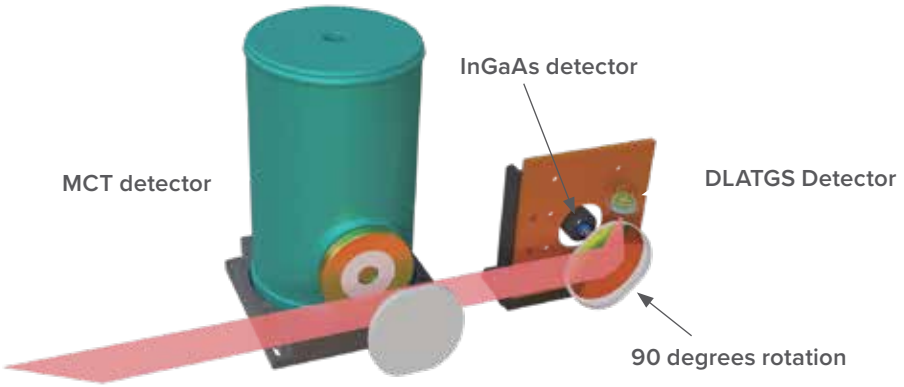
Chemical image

Powerful 2-in-1 MCT Detector and 4 Detector Capability

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

*[*1] When installing 2-in-1 MCT detector, up to 4 detectors can be controlled.*

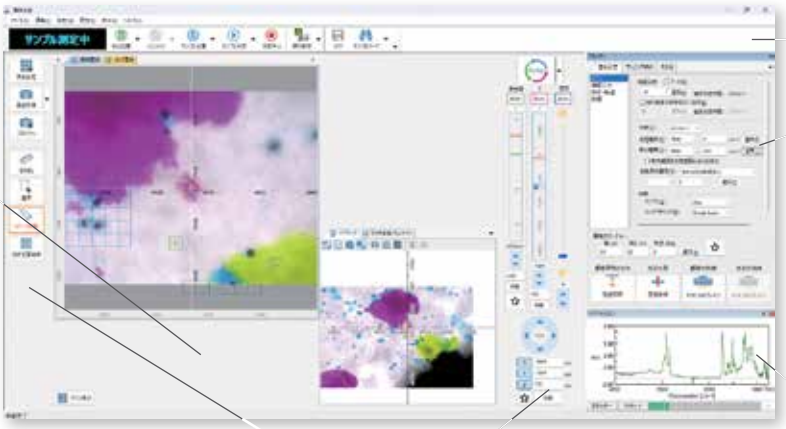
*[*2] For information about the 2-in-1 MCT detector, please refer to page 7.*



IRT-5X multiple detectors

USABILITY

Enhanced Micro Measurement Program with a Newly Designed User Interface



Newly designed user interface provides intuitive control of the XYZ autostage, making it easier to set up and display essential information for micro measurements. Additionally, the sub-map function offers a comprehensive view of the entire sample on the stage, significantly improving operational efficiency.

Enhanced Measurement Functions for Foreign Material Detection

Observation image

Recognition/registration of measurement targets

Spectral search (IR Advanced Search NAV)

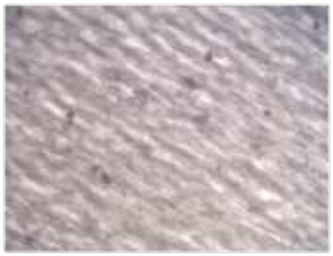
The system offers advanced measurement support functions to enhance accuracy and efficiency. IQ IR NAV utilizes image processing technology to identify measurement targets in real time from observation images. It can also register their coordinates and execute precise measurements. Additionally, IR Advanced Search NAV filters measurement targets based on specific conditions, such as sample size and circularity, and instantly displays spectral search results on the observation image.

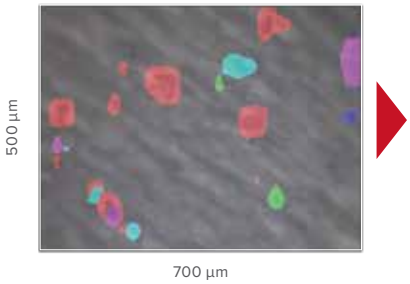
Seamless Condenser Mirror Replacement with Slide-In Mechanism

IRT-5X features a convenient slide-in mechanism for the condensing mirror mount, allowing quick and effortless replacement with a mirror of a different magnification.

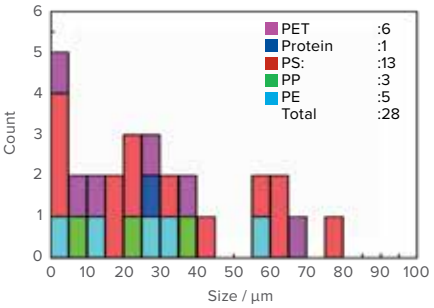
JASCO Particle Analysis (standard)

JASCO Particle Analysis enables comprehensive dimension measurements using both observation images and chemical image data. The program includes statistical processing features, allowing for generation of particle size histograms, frequency distributions, correlation distributions, and component ratio analyses.





Observation image (left) and 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.

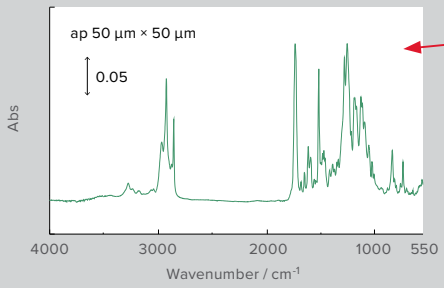
OPTIONS

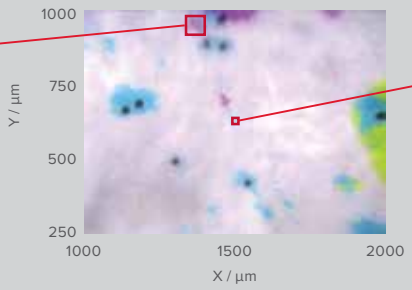
2-in-1 MCT Detector

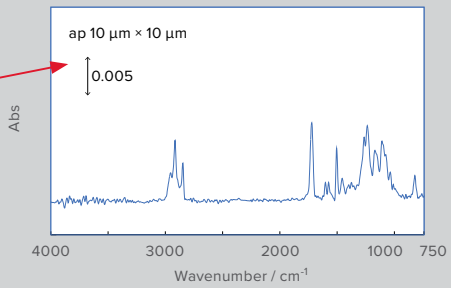
The 2-in-1 MCT detector features two detection elements—midband MCT and narrowband MCT—housed within the same dewar. The midband MCT delivers performance comparable to a midband MCT detector, with the added advantage of extending measurements down to 550 cm^{-1}. Meanwhile, the narrowband MCT is optimized for highly precise micro-scale measurements.

**When installing 2-in-1 MCT detector, standard MCT detector cannot be installed.*

Transmission measurement of toner using 2-in-1 MCT detector







Magenta part (ap 50 µm)
Midband MCT

Cyan part (ap 10 µm)
Narrow band MCT

IQ Frame

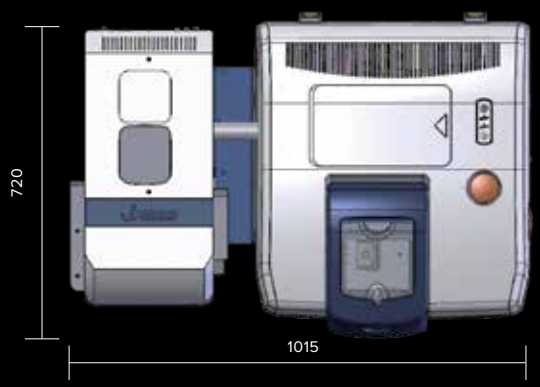
The integration of an XYZ autostage with IQ Frame allows precise measurement of the same sample position using an IR microscope, Raman microscope, and UV-Visible/NIR microscope spectrophotometer. Notably, infrared spectroscopy and Raman spectroscopy complement each other, and analyzing both spectra enhances the accuracy of the analysis.

Sharing location information

INSTRUMENT DIMENSIONS

IRT-5X + FT/IR-4X

IRT-5X + FT/IR-6X/8X



*Dimensions exclude additional space for PC monitor and printer.

JASCO INTERNATIONAL CO., LTD.
11-10, Myojin-cho 1-chome, Hachioji, Tokyo 192-0046, Japan
Tel: +81-42-649-3247 Fax: +81-42-649-3518 http://www.jascoint.co.jp/english/
Australia, Hong Kong, India, Indonesia, Korea, Malaysia, New Zealand,
Pakistan, Philippines, Russia, Singapore, Taiwan, Thailand, Vietnam

JASCO INCORPORATED
28600 Mary's Court, Easton, Maryland 21601, U.S.A.
Tel: +1-410-822-1220 Fax: +1-410-822-7526 Web: www.jascoinc.com
Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Mexico,
Paraguay, Peru, Puerto Rico, United States of America, Uruguay, Venezuela

JASCO EUROPE S.R.L.
Via Luigi Cadorna 1, 23894 Cremella (LC), Italy
Tel: +39-039-9215811 Fax: +39-039-9215835 Web: www.jascoeurope.com
JASCO Deutschland www.jasco.de | **JASCO UK** www.jasco.co.uk | **JASCO France** www.jasco.fr
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JASCO China (Shanghai) Co., Ltd.
Room No.D, 10F, World Plaza, 855 Pudong South Road, Pudong New Area,chi
Tel: +86-21-6888-7871 Fax: +86-21-6888-7879 http://www.jasco-global.com

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CE

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