

Fourier Transform Infrared Spectrophotometer

IRTracer-100



IRTracer™-100

Fourier Transform Infrared Spectrophotometer

New Levels of Performance and Quality
Created by Excellent Sensitivity, Speed and Resolution



Excellent Sensitivity and Reliability

- High Sensitivity, High Resolution and High Speed
- Reliable High Performance

New Generation of Workstation

- Fast, Easy-to-Use LabSolutions™ IR Series Software
- Reliable LabSolutions Software
- Reliable Data Integrity

Meeting the Needs of a Wide Range of Analyses

- Various Application Programs Support All Analyses
- A Wide Variety of Options Available for All Applications

Excellent Sensitivity and Reliability

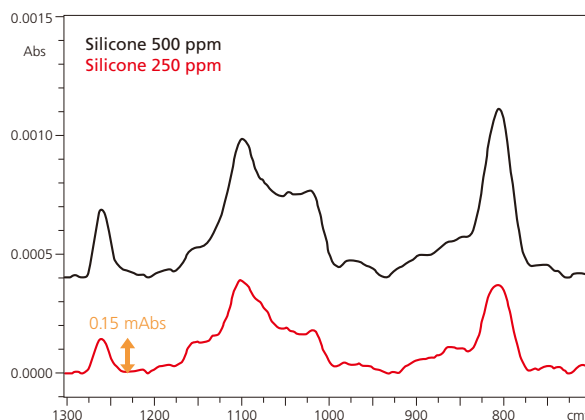
High Sensitivity, High Resolution and High Speed

High-Sensitivity Measurements, with an SN Ratio of 60,000:1*1

A trace amount of silicone oil in paraffin oil were measured using the IRTracer-100 with a single reflection ATR attachment. The peak from the silicone was extremely weak ($1,260\text{ cm}^{-1}$), a mere 0.00015 absorbance, but it was measured with a high SN ratio.

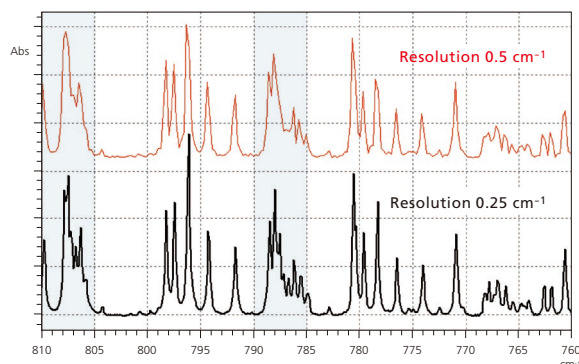
Remarks:

- Differential spectrum with the spectrum of the paraffin oil subtracted
- Measured with a DLATGS detector, at a resolution of 4 cm^{-1}



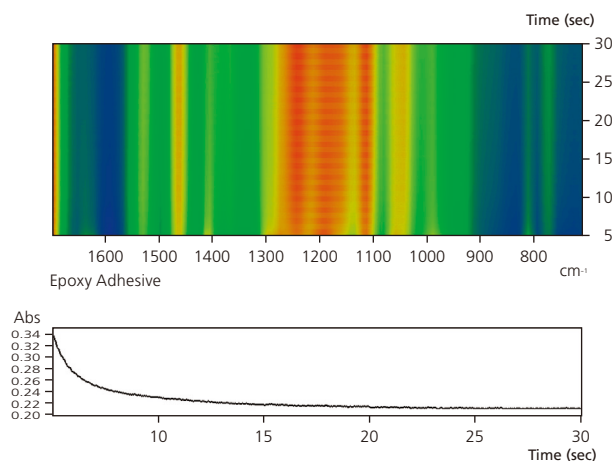
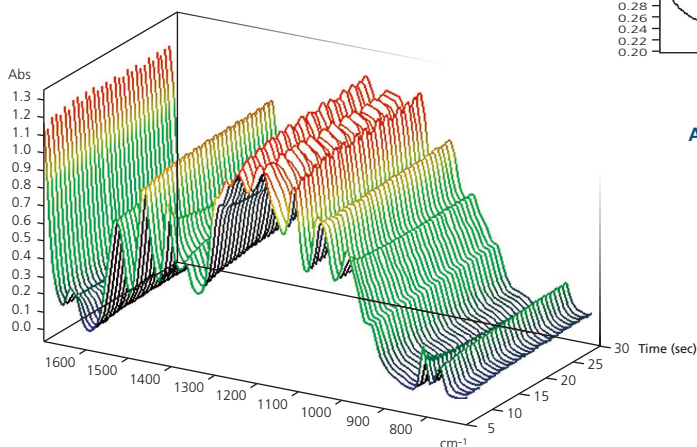
Acquire High-Resolution Spectra with a 0.25 cm^{-1} Resolution Setting

Highly accurate quantitation and identification can be achieved with 0.25 cm^{-1} resolution. For example, this resolution is suitable for the detailed analysis of each peak in a gas sample. When ammonia gas was run at 0.25 cm^{-1} resolution, peaks in the 785 to 790 cm^{-1} ranges were clearly resolved.



Achieve High-Speed Analysis with a 20 Hz Rapid Scan Feature*2

The rapid scan function allows a maximum of 20 spectra per second to be obtained. This makes the IRTracer-100 suitable for fast reactions that occur within a few seconds and for kinetic studies occurring in less than one second. Rapid, high-sensitivity analysis with a 2,000:1 SN ratio is available.



Analysis of curing reaction of UV light curable resin

Sample : UV light curing adhesive
Resolution : 16 cm^{-1}
Scan accumulation : 1 scan
Interval : 50 msec
Monitor : Peak at around $1,400\text{ cm}^{-1}$
Detector : T2SL

*1 peak-to-peak, 4 cm^{-1} resolution, in a neighborhood of $2,200\text{ cm}^{-1}$, 1-minute accumulation

*2 16 cm^{-1} resolution. Rapid scan program is optional.

Reliable High Performance

The IRTracer-100's interferometer is optimized and stabilized using a combination of a smooth moving mirror system and the Advanced Dynamic Alignment. To assure that the IRTracer-100 is always in the optimum operating condition, a self diagnoses routine monitors the operation of the system at initialization and constantly during operation. In addition, standard EP/CHP/JP/USP/ASTM validation programs are provided to evaluate the FTIR performance.

Built-in Automatic Dehumidifier Allows for Easy Maintenance

Beam splitters used in FTIR interferometers are susceptible to humidity. In order to maintain the long-term stability of the interferometer, the beam splitter must be protected from moisture. To address this issue, the IRTracer-100 has been engineered with an airtight interferometer that incorporates a unique internal Automatic Dehumidifier.

Three Measures Taken to Protect the Optical Element in the Interferometer

The interferometer is sealed in an airtight housing.

An electronic Automatic Dehumidifier continuously removes any moisture, ensuring a dry interferometer chamber.

The beam splitter is covered with a moisture-resistant protective coat.

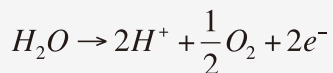
Principle of the Automatic Dehumidifier

The IRTracer-100 incorporates an Automatic Dehumidifier that electrolytically removes the moisture inside the interferometer using a solid polymer electrolytic membrane. Because the electric power required to operate the Automatic Dehumidifier is less than the continuous operation of the FTIR, it can reduce CO₂ emissions by approximately 400 kg/year.*

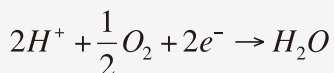
* Model case by SHIMADZU

- 1 When porous electrodes are attached to a solid polymer electrolytic membrane and direct current is applied, moisture on the anode side (i.e., the desiccation side) dissociates into hydrogen ions and oxygen.
- 2 The hydrogen ions travel through the solid polymer electrolytic membrane and reach the cathode side (i.e., the moisture discharge side).
- 3 At the cathode, the hydrogen ions react with oxygen in the air to form (gaseous) water vapor, which is released outside the interferometer.

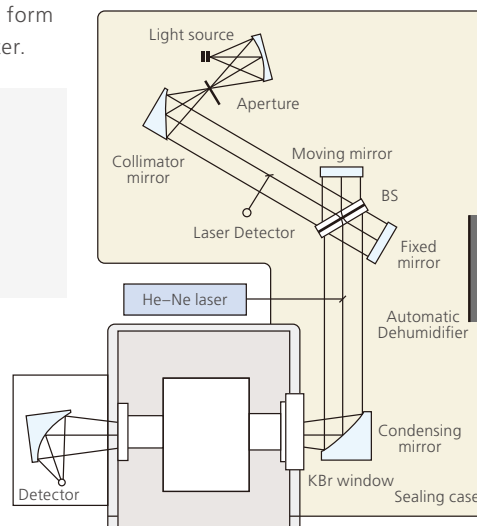
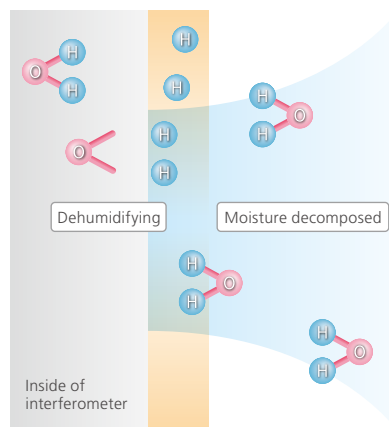
Anode
(desiccation side)



Cathode
(moisture discharge side)

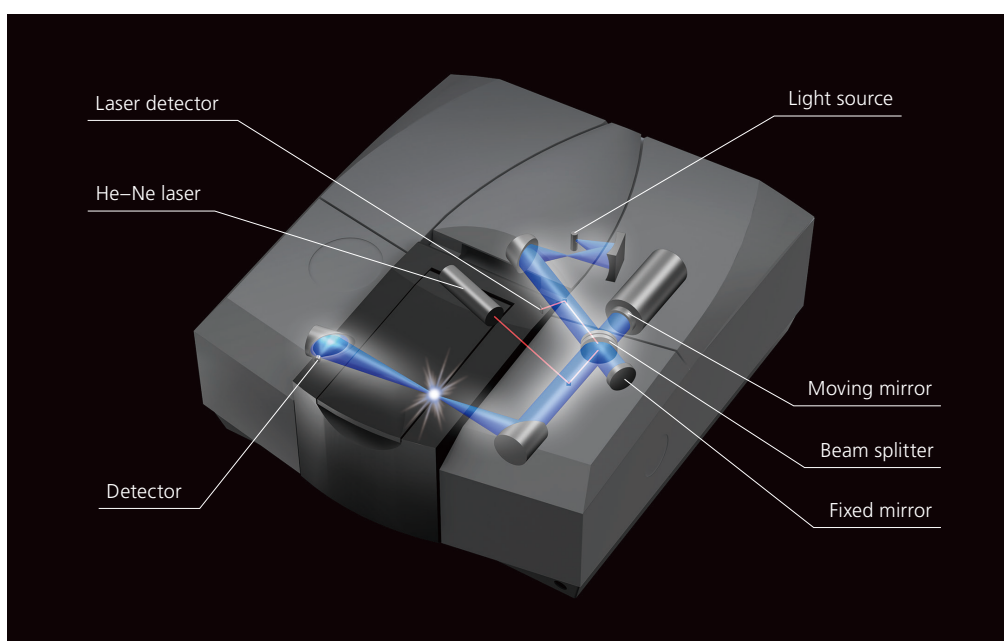


Replacing the window (KBr) at the sample compartment with an optional KRS-5 window (P/N 206-74211-58) ensures safe operation with no concern for the window plate becoming cloudy under a high humidity environment.



Incorporation with Advanced Dynamic Alignment

Achieving reproducible optical interference in a spectrophotometer requires a robust interferometer design. The interferometer in the IRTracer-100 easily meets this requirement. The smooth moving mirror system monitored by the Advanced Dynamic Alignment (Japanese Patent No. 3613171) system allows the IRTracer-100 to provide optimum and stable quality spectra after only a short warm-up time. Sampling at over 5,000 times/second the Advanced Dynamic Alignment keeps the IRTracer-100 in optimum operating condition. In addition, the Advanced Dynamic Alignment system automatically aligns the interferometer when the beam splitter is changed for NIR or FIR analysis.



Four Benefits of Advanced Dynamic Alignment

Removes the influence of environmental variations

Allows the FTIR to be powered off when not in use*
(saving electricity and reducing the environmental impact)

Shorter warm-up times and enhanced stability

Provides for a maintenance-free system

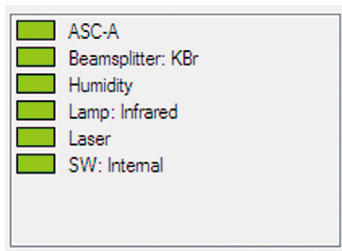
* Automatic Dehumidifier is working.

Scheme of Advanced Dynamic Alignment

- 1** The interference pattern of the He-Ne laser light is detected by the Laser Detector.
- 2** The quality of the produced interference is calculated.
- 3** The calculated interference is compared with stored patterns obtained under optimum operating conditions.
- 4** The difference between these interference patterns is calculated by an advanced digital signal processor.
- 5** The inclination of the fixed mirror is continuously adjusted to eliminate any difference and maintain optimum operating sampling conditions.

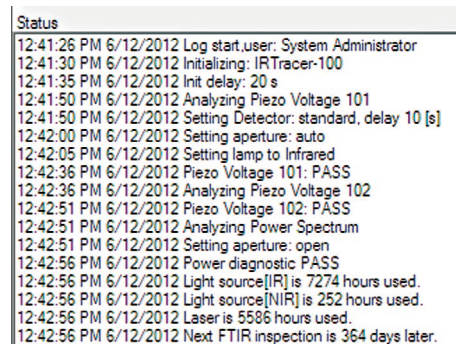
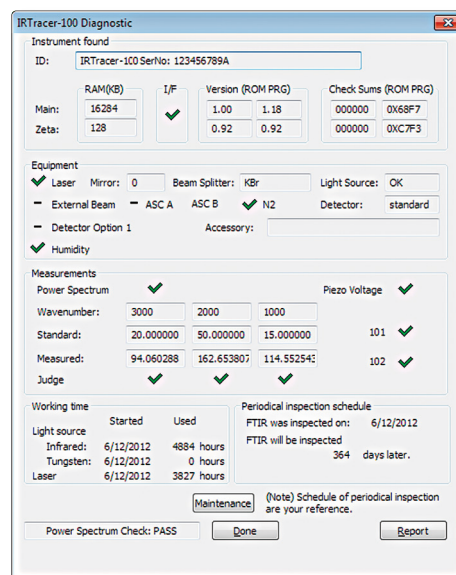
Five Self-Diagnostic Functions

- ▶ The IRTracer-100 executes a self-diagnosis at instrument initialization, checking the electrical, signaling, and optical systems. If the interference conditions are not optimum, they are adjusted and optimized using the Advanced Dynamic Alignment mechanism.
- ▶ The internal status monitor function offers continuous monitoring of the beam splitter type, the light source, the He-Ne laser, humidity condition, and information related to auto-start accessories.



- ▶ The hours*¹ used on the ceramic source and He-Ne laser as well as the time remaining before the next periodic inspection are monitored.
- ▶ When the beam splitter is exchanged for Near IR and Far IR analysis, the IRTracer-100 automatically detects the new beam splitter. In addition, when an accessory is installed, the accessory is automatically identified and optimum measuring conditions are automatically set*².
- ▶ Diagnostic and monitoring results are recorded in logs for reference.

*¹ 3-year warranty for light source and 30-month warranty for He-Ne laser
 *² Only when QuickStart accessories are installed.



Validation Program, Verifies FTIR Performance

The IRTracer-100 is equipped with a validation program that complies with the Japanese Pharmacopoeia (JP), US Pharmacopoeia (USP), the European Pharmacopoeia (EP), and Chinese Pharmacopoeia (ChP) and with ASTM (American Society for Testing and Materials) specifications. The validation program checks the basic performance of the instrument using a polystyrene film with traceability etc., and creates reports of the results.

Items conforming to the Japanese Pharmacopoeia, US Pharmacopoeia, European Pharmacopoeia, and Chinese Pharmacopoeia are inspected	Test Specifications for ASTM (ASTM E1421 Level Zero)
<ul style="list-style-type: none"> • Shape and intensity of power spectra • Following items of polystyrene film spectrum <ul style="list-style-type: none"> • Resolution • Wavenumber accuracy • Wavenumber repeatability • Transmittance (absorbance) repeatability • Peak separation function 	<ul style="list-style-type: none"> • Energy intensity test based on the power spectrum • Noise test based on a 100 % transmittance spectrum • Reproducibility test based on a polystyrene spectrum

Notes:
 • Wavenumber repeatability is an inspection item only in the Japanese Pharmacopoeia.
 • The peak separation function is an inspection item only in the Chinese Pharmacopoeia.
 • The only US Pharmacopoeia inspection item is wavenumber accuracy.

New Generation of Workstation

Fast, Easy-to-Use LabSolutions IR Series Software

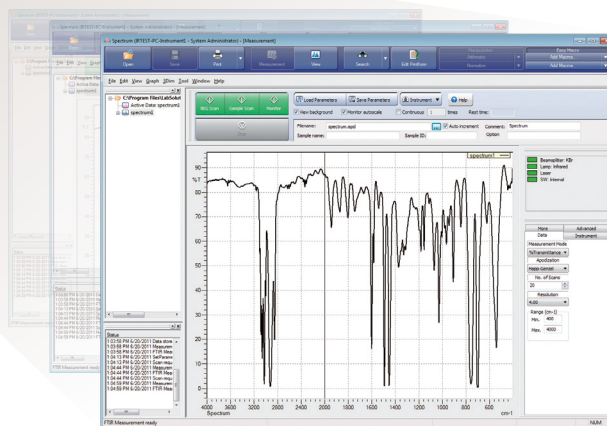
LabSolutions IR easily executes FTIR operations such as scanning, data manipulation, quantitation, reporting, saving, user administration, and more. High-level administrative functions and a variety of data manipulation functions provide for an easier, more user-friendly analysis environment. In addition, numerous optional programs are available to address all modern laboratory needs.



Launcher

Run Dedicated LabSolutions IR Programs or Windows® Applications Easily with the Dedicated LabSolutions IR Launcher.

LabSolutions IR includes a number of dedicated programs, including Postrun, Spectrum, and Quantitation, which are easily launched using the LabSolutions IR Launcher. In addition, macro programs and Windows® applications can be registered with the LabSolutions IR Launcher for quick and easy start-up.



Excellent Features of LabSolutions IR Series

Network Features

- ▶ High-level security and user administration functions.
- ▶ Suitable for ER/ES regulations such as FDA 21 CFR Part 11, PIC/S, and more.
- ▶ Management of FTIR as well as LC and GC data by the server on a network.

Extensive Spectra Library and High-Performance Search Function

- ▶ Features a library containing approximately 12,000 spectra.
- ▶ Enables high-quality searching with standard libraries.
- ▶ High-performance search methods, including Spectral, Text, Combination, and Peak searches.
- ▶ Shimadzu's unique search algorithm provides precise search results.

Macro Program Functions Provide Automation and Labor-Savings

- ▶ Simply align steps to create a Macro program.
- ▶ Automated identification tests and contaminants analysis.

Programs

- ▶ Postrun, Spectrum, Quantitation, Photometric, Time course (option), Mapping (option)
- ▶ All of the Postrun and measurement programs have a common Main toolbar, Menu, Measurement toolbar, Tree view, and Log window. The operation of each program is also similar, providing a familiar feel no matter what task you are working.

Reporting

- ▶ Easy printing using the ViewPrint function and Free-layout reports.

Data Manipulation

- ▶ A wide variety of data manipulation functions, including Advanced ATR correction and Kubelka-Munk conversion, and quantitation functions, such as the multi-point calibration curve method and CLS method, are standard.

Reliable LabSolutions Software

In addition to LabSolutions IR, which provides basic functionality, Shimadzu also offers LabSolutions DB IR and LabSolutions CS IR to meet the requirements of ER/ES regulations.

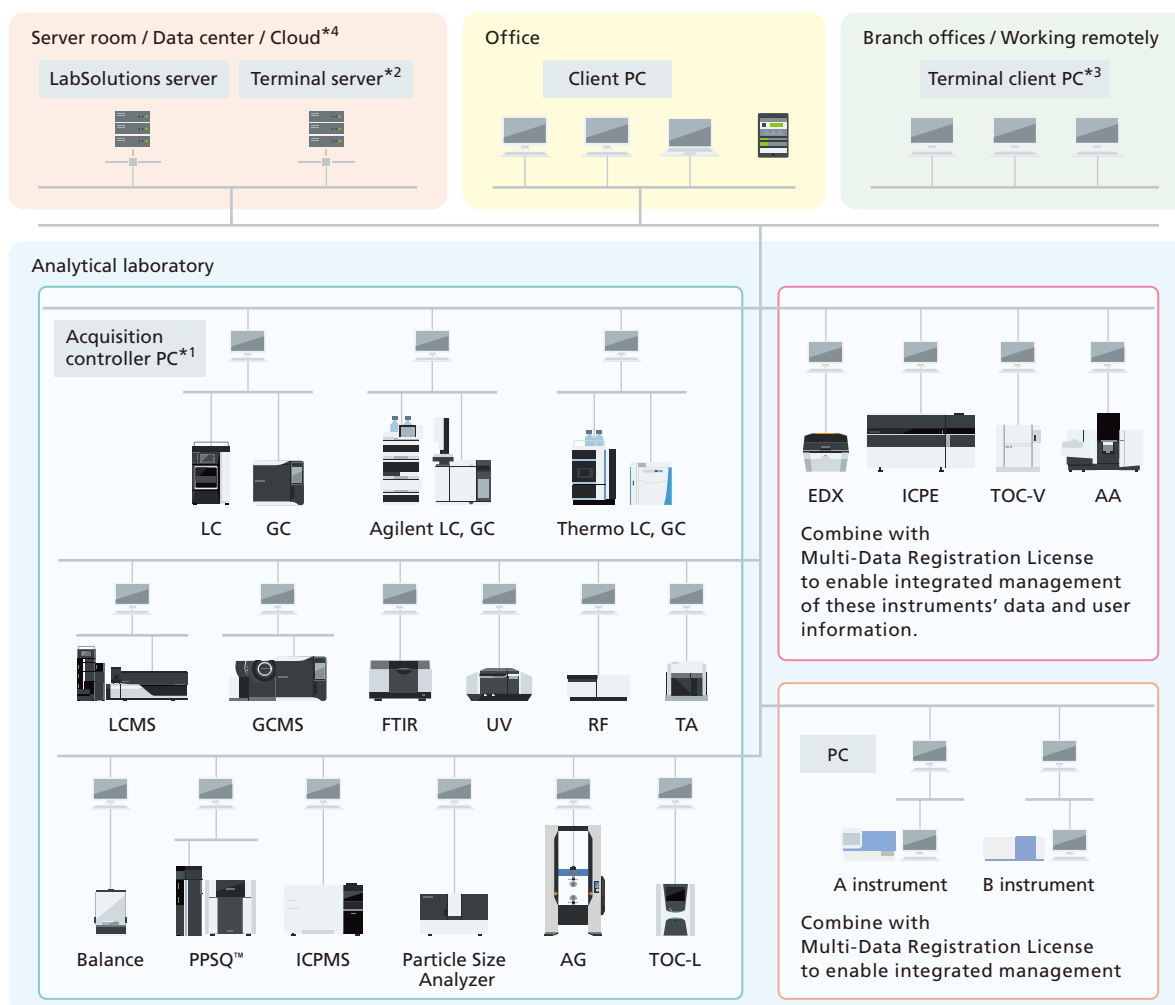
LabSolutions DB IR

LabSolutions DB IR allows for secure data management by integrating a data management function with LabSolutions IR. Compliant with ER/ES regulations, the software is optimally configured for customers using a PC. It is recommended for facilities that do not require network connections and want to be ER/ES compliant.



LabSolutions CS IR

LabSolutions CS, which is freely accessible to the analysis network, can be connected to LabSolutions IR, eliminating the need for connecting a PC to the instrument. Since all the data are managed on a server, LabSolutions CS IR can be read from any personal computer on a network. With terminal service, LabSolutions IR can be controlled from a client PC without installing LabSolutions IR on it. It is recommended for facilities that have a large number of users, manage data in a database, and want to be ER/ES compliant.



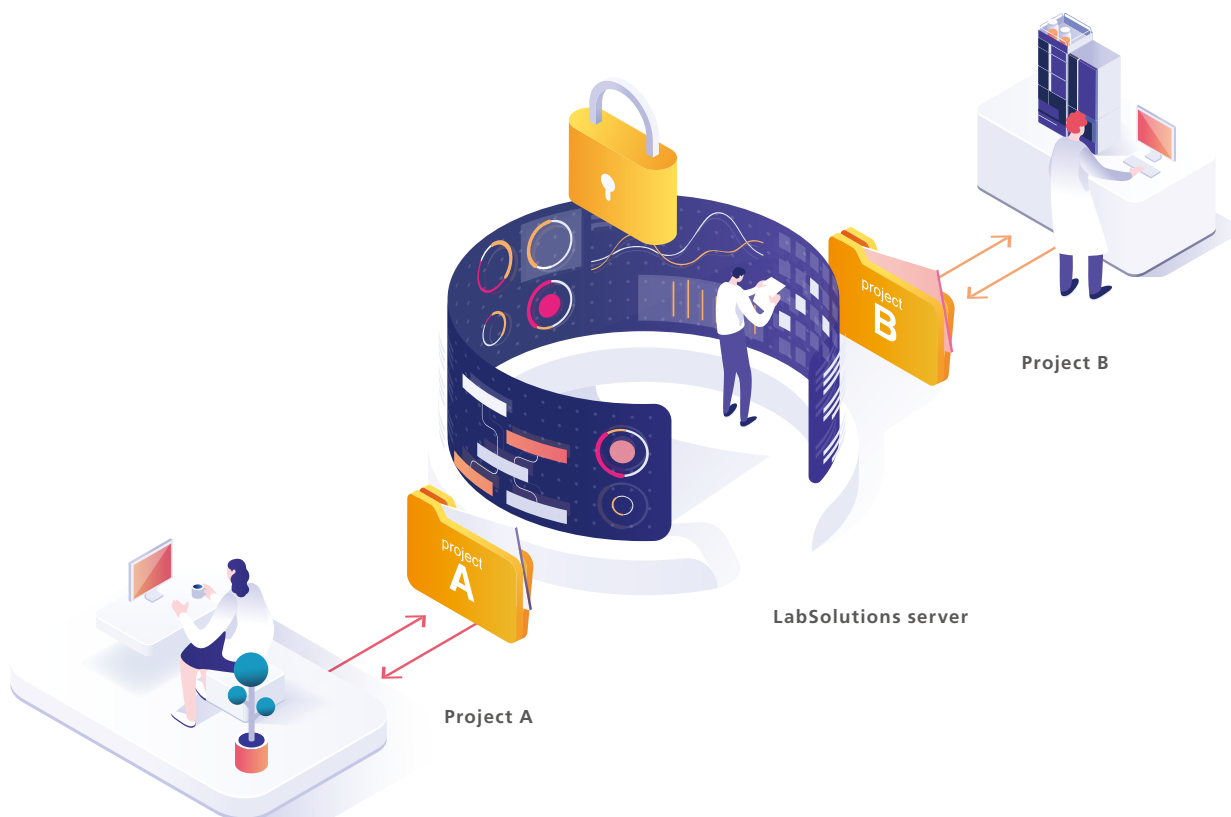
^{*1} The acquisition controller PC controls analytical instruments.

^{*2} A terminal server is a server for using terminal services. Users can view data reports and perform electronic signature operations through terminal services. It is ideal for remote connections because of the low network load. Only LC, GC, LCMS, and GCMS support analysis and post-run operations through terminal services.

^{*3} If a terminal service is used, LabSolutions software does not need to be installed on client PCs or tablets.

^{*4} Servers can be built on various clouds (IaaS). AWS (Amazon Web Services), Microsoft® Azure®, GCP™ (Google Cloud Platform™)

Data Integrity Compliance



Solid Security

An audit trail to ensure the reliability of data and document e-mail transmission functions when any event occurs in the system can be set up. User accounts are managed using passwords, where password length, complexity and term of validity must satisfy specified requirements. It is also possible to set lockout functions to prevent illegal access, and set a registered user's deletion and change in status. In addition, a box can be selected to prevent overwriting a data file and outputting an item to a report can be performed.

Essential Information is Managed for Every Project

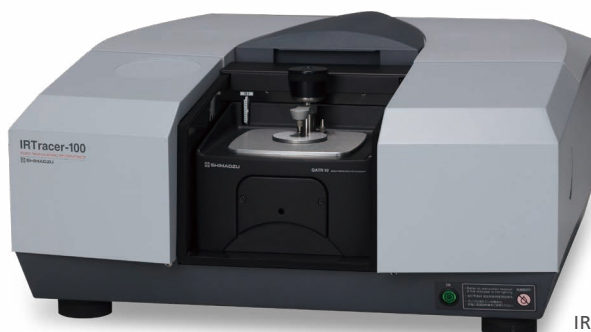
LabSolutions DB IR and CS IR provide a project management function enabling management suited to tasks and system operations. This function enables equipment and user management, security policy, and data processing to be set on a project by project basis, thereby improving the efficiency of data searches and management tasks.

Visualization of the Sequence of Analysis Operations

Report set includes test methods and test results for a series of samples analyzed as well as a corresponding operation log (a record of all operating events from login to logout), which is automatically extracted from the data and summarized in a single report. It provides visibility of the individual analytical operations, and helps to check for operating errors and improve the efficiency and reliability of checking processes.

Meeting the Needs of a Wide Range of Analyses

A wide variety of programs and accessories is available in order to meet the needs of various customers.



IRTracer-100+QATR 10

Customize Your Own IRTracer-100 System

You can customize your own IRTracer-100 system with a wide variety of accessories and easy-to-use software options to meet the needs of your specific application.



Electrical, Electronics, and Semiconductors

- ☐ Thickness measurement of epitaxial films
- ☐ Quantitative analysis of interstitial oxygen and substituted carbon
- ☐ Quantitative analysis of phosphorus and boron in BPGS
- ☐ Quantitative analysis of hydrogen concentration in nitride film
- ☐ Quantitative analysis of hydrogen concentration in amorphous silicon
- ☐ Detection of brominated flame retardants (RoHS)
- ☐ Analysis of thin films
- ☐ Analysis of contaminants
- ☐ Failure analysis
- ☐ Analysis of semiconductor gases
- ☐ WEEE

Chemicals and Polymers

- ☐ Raw material identification tests
- ☐ Qualitative analysis of plastics and rubber
- ☐ Identification of functional groups of synthetic products
- ☐ Analysis of surface preparation agents
- ☐ Analysis and thickness measurement of thin films
- ☐ Analysis of catalysts
- ☐ Analysis of paints and coatings
- ☐ Analysis of contaminants
- ☐ Quantitative analysis
- ☐ Recycle

Environmental

- ☐ Water analysis
- ☐ Soil analysis
- ☐ Exhaust gas analysis
- ☐ Measurement of particles in water or air
- ☐ Analysis of asbestos
- ☐ Oil in water analysis



Pharmaceuticals

- ☐ Raw material identification tests
- ☐ Identification of functional groups of synthetic products
- ☐ Identification of functional groups of natural products
- ☐ Analysis of contaminants

Food Products

- ☐ Raw material identification tests
- ☐ Packaging material identification tests
- ☐ Analysis of contaminants

Automobiles

- ☐ Material identification tests
- ☐ Analysis of contaminants
- ☐ Failure analysis

Academia

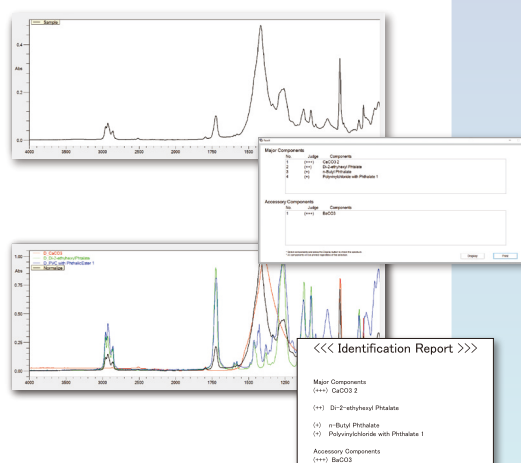
- ☐ Research & Development
- ☐ Educational laboratories

Various Application Programs Support All Analyses



Contaminant Analysis Program

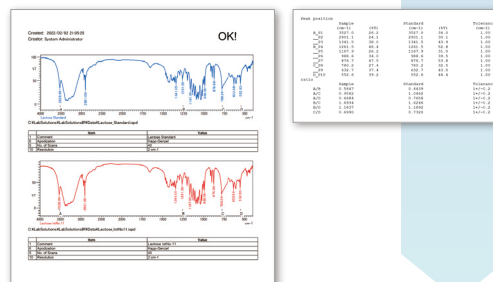
The contaminant analysis program identifies measured contaminants using Shimadzu's proprietary identification algorithm (Japanese Patent No. 5205918) in combination with a spectral library containing more than 550 spectra for substances commonly detected as contaminants. After data analysis, it automatically makes a pass/fail judgment and creates a report. Even if the contaminant is a mixture, it searches for major and minor components and displays their ranks. Since the number of components in the mixture does not need to be specified, even operators with minimal infrared analysis experience can easily analyze samples. It takes just seconds between selecting the spectrum and displaying the analysis results.



Identification Test Program

The identification test program calculates the difference in peak wavenumbers and peak ratio intensities between standard and test sample data, and then summarizes the pass/fail judgment results in a printed report. This program can be used if the standard is described in the national pharmacopoeia or official law. Spectra of 57 substances included in Japan's Specifications and Standards for Food Additives are also included in this program.

Use	No.	Wavenumber	Tolerance (cm ⁻¹)	No. of Ratio Peaks
<input checked="" type="checkbox"/>	1	3526.89	1	A 1
<input checked="" type="checkbox"/>	2	2901.06	1	B 4
<input checked="" type="checkbox"/>	3	1641.55	1	C 0
<input checked="" type="checkbox"/>	4	1261.5	1	D 10
<input checked="" type="checkbox"/>	5	1107.85	1	
<input checked="" type="checkbox"/>	6	999.56	1	
<input checked="" type="checkbox"/>	7	876.69	1	
<input checked="" type="checkbox"/>	8	780.24	1	
<input checked="" type="checkbox"/>	9	692.69	1	
<input checked="" type="checkbox"/>	10	652.69	1	



Library Useful for Identification Testing and Contaminant Analysis

Approx. 12,000-spectra library

A wide variety of libraries, including Shimadzu's unique libraries, reagents, polymers and more, is included standard. Searching with standard libraries provides high-quality search results without purchasing extra libraries.

SHIMADZU Food additives library	Reagents	Pharmaceutical products, agricultural chemicals
SHIMADZU Contaminant library	Polymers	Inorganic compounds



- Automated support functions utilizing digital technologies, such as M2M, IoT, and Artificial Intelligence (AI), that enable higher productivity and maximum reliability.
- Allows a system to monitor and diagnose itself, handle any issues during data acquisition without user input, and automatically behave as if it were operated by an expert.
- Supports the acquisition of high quality, reproducible data regardless of an operator's skill level for both routine and demanding applications.

A Wide Variety of Options Available for All Applications

EDX-FTIR Contaminant Finder/Material Inspector EDXIR-Analysis™ Software

Integrated Data Analysis for Contaminants

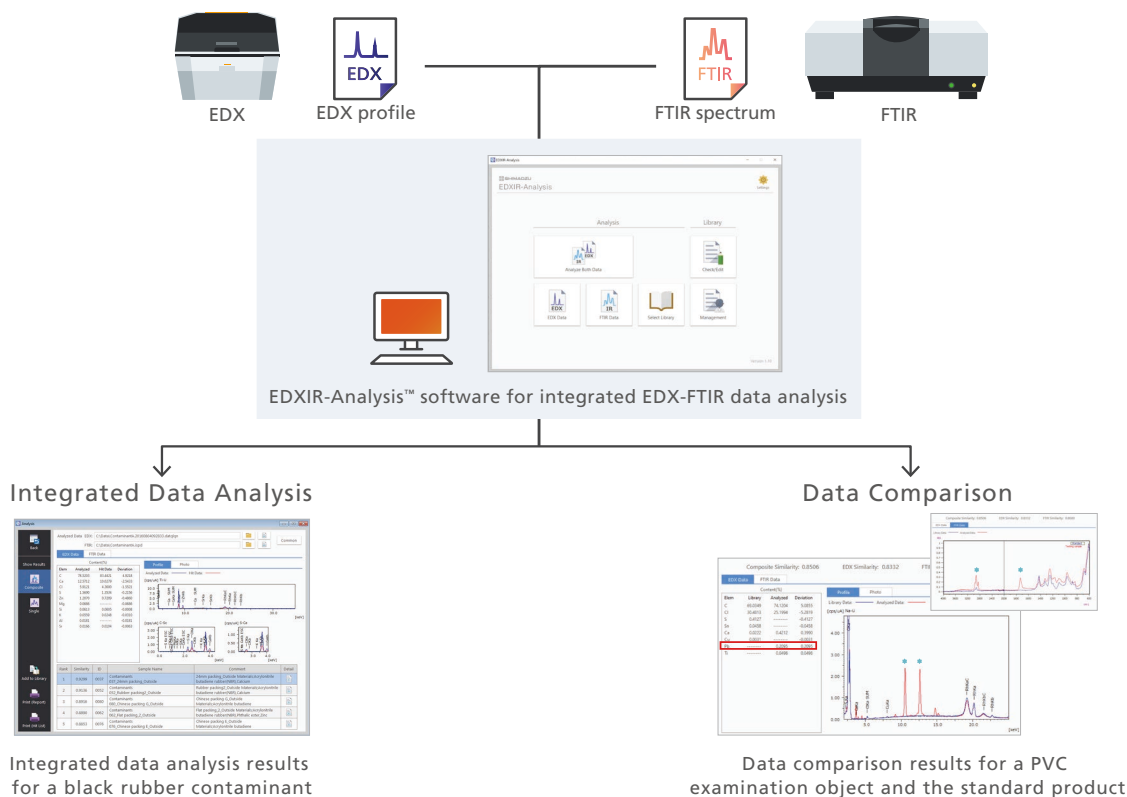
- ✓ To perform qualitative analysis automatically, simply click "Analyze Both Data" and select the EDX/FTIR data.*¹
- ✓ This enhances the efficiency of time-consuming analyses that were traditionally left to the analyst, and provides strong support for contaminant analysis.
- ✓ In addition to a list of hits, the integrated data analysis results show EDX profiles and FTIR spectra found as hits from the library.

Data Comparisons for Identification Tests

- ✓ A Data Comparison function calculates the degree of matching between the actual measured data and the data registered in the library.
- ✓ The software can be used for countermeasures against "silent change" and for other confirmation tests.
- ✓ Clicking the "Print" button prints the results in a fixed format and also saves them in Word format.*²

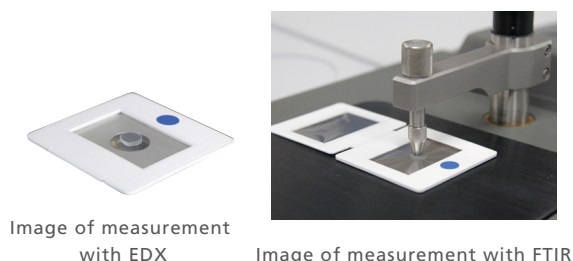
*¹ Using the EDX profile, data are classified as organic, inorganic, and mixture. Integrated data analysis is performed by applying priority levels to each classification (Patent No. 06638537).

*² Microsoft® Word must be installed.

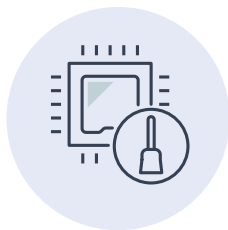


EDXIR-Holder™ Sample Holder/Stocker for Contaminant Measurement

This foldable holder consists of an adhesive layer with samples attached and polypropylene film designed for X-ray fluorescence analysis. It provides measurement by keeping the samples in the holder with EDX and FTIR. When using EDX for measurement, close the holder and place the polypropylene film directly to the irradiation side (downside). When using FTIR for measurement, open the holder and press the samples attached to the adhesive layer against the ATR prism. Close the holder after the measurement and it can be used as sample storage.



Applications and Options



Electrical/Electronic Applications (Defect Analysis and Contaminant Analysis)

Microscopes are well suited to measuring micro-areas. Because they focus the light, there is greater light loss than with regular measurements, but they can accurately identify tiny peaks from a high-sensitivity interferometer.

AIMsight™ Infrared Microscope

The automatic analysis systems can be used with ease even by users new to analysis work. It is equipped as standard with a variety of enhanced functions (Wide-field camera, Automatic contaminant recognition system, Length measurement function, Contaminant analysis program, Spectrum advisor function) that support analysis work.



AIRsight™ Infrared/Raman Microscope

Infrared and Raman microscopy based on a combination of two analytical techniques to provide complementary molecular information. Both infrared and Raman spectra can be measured from the same position in the extremely small area without moving the sample. As it is equipped standard with 532 nm and 785 nm lasers, it is possible to analyze samples susceptible to fluorescence.



For Infrared Measurement ATR Objective

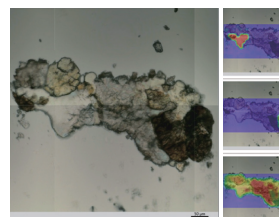
This objective lens is used when performing ATR measurements with the AIMsight infrared microscope. Using a cone-type prism, this single reflection objective features 15× magnification and a 45-degree mean incident angle. The slide-on type prism makes it easy to switch back and forth between visible observation and infrared measurement.



For Infrared/Raman Measurement High-Speed Mapping Program / Particle Analysis Program

The mapping program measures the absorption distribution on the surface of a sample and creates imaging data when used with the Shimadzu AIMsight infrared microscope and AIRsight infrared/ raman microscope. It allows setting of mapping parameters, such as the mapping range, the scan intervals, and the background positions, on the composite visible images.

By adding a particle analysis program to AMsolution, the chemical images obtained from mapping measurements^{*1} can be used to calculate individual particle qualities, as well as the major axis, minor axis, mass^{*2}, and volume^{*2}.



*1 The optional High-Speed Mapping Program is separately required.

*2 Mass and volume are calculated based on the theoretical formula (Formula (1) $[\log_{10}(M)=b \cdot \log_{10}(S)+a]$) used in the article referenced below.

This theoretical formula applies only to microplastics. Shimadzu cannot guarantee the validity of the mass results.

Tomoya Kataoka, Yota Iga, Rifqi Ahmad Baihaqi, et al. Geometric relationship between the projected surface area and mass of a plastic particle. Water Research. 2024;261:122061.



Chemicals and Polymer Applications (Tracking Reactions in Materials)

Rapid scan measurements are useful for tracking reaction changes in UV curable resins. Optional Rapid Scan software can visually display time-course changes in target peaks during each scan. As scan speeds increase, the sensitivity of the standard DLATGS detector can decrease due to the detector's frequency characteristics. However, an optional T2SL kit can be installed to enable high-sensitivity measurements even at high scan speeds.

QATR™ 10

This single-reflection ATR attachment features a prism made of only diamond to enable measurements up to 400 cm^{-1} (wide range model). Spectra are measured from liquid samples by simply placing a droplet on the prism. Other samples are measured by placing them on the prism and clamping them against the prism surface. The angle of incidence is 45 degrees. Four types of prisms are available, including a Ge, ZnSe, and two diamond prisms (wide range and high-throughput models). The Ge prism is best suited for samples with a high refractive index.



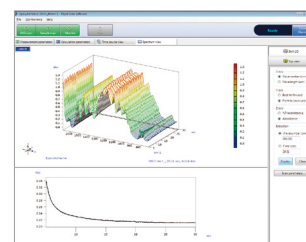
MIRacle™ 10

This is a single-reflection ATR accessory. To measure the spectrum of a liquid, simply place it on the surface of the prism drop-wise. Measure solid samples by simply clamping them onto the surface of the prism using the provided pressure clamp. In addition, the MIRacle-10 enables easy measurement of large samples (with a large surface area) without compromising sample integrity. The incidence angle is 45°. Select from three prism options: ZnSe, Ge, and diamond/ZnSe, and whether the prism is equipped with a pressure sensor. The Ge prism is ideal for samples with a high refractive index.



Rapid Scan

The Rapid Scan option provides the capability of collecting and recording a maximum of 20 spectra/second. This is especially suitable for fast reactions kinetics, where reactions are completed in a few seconds. Spectra obtained from Rapid Scan measurements can be used to calculate peak heights and areas, which are used to determine kinetic rates.



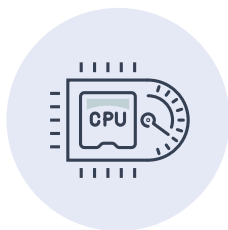
Contaminant Library for LabSolutions IR

This is Shimadzu's latest original library. It is an effective tool for analyzing contaminants in tap water and food. In addition to containing information on actual sample contaminants and information about water supply maintenance parts commercially available in Japan, the library also includes X-ray fluorescence profiles (PDF files) to significantly improve the accuracy of contaminant searches. Unlike existing libraries, this library contains data on mixed compounds and incorporates the depth of knowledge and experience needed to make qualitative assessments.

KnowItAll® Bundle

Activate John Wiley & Sons, Inc. KnowItAll from a button in the LabSolutions IR software to automatically transfer the active spectrum. With KnowItAll, you can perform searches using a rich library, analysis of constituent components and constituent ratios by mixture analysis, and functional group analysis by searching for functional groups of specified peaks.

* LabSolutions IR does not work with KnowItAll Version 2018 and earlier.



Semiconductor Applications

(Monitoring Semiconductor-Related Gases)



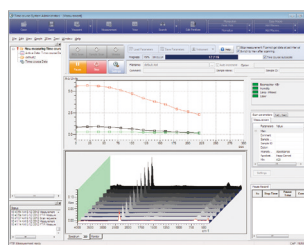
Environmental Applications

(Exhaust Gas Analysis)

Gas analysis requires selecting a cell length and window material appropriate for the type and concentration of gas being analyzed. Longer optical path lengths result in greater than normal light losses, but reliable data can be obtained using a high-sensitivity interferometer to suppress baseline noise. Additionally, an T2SL kit can be installed to increase sensitivity.

Time Course Software

The time course program is used to collect spectra in regular intervals. It creates a time course dataset used to follow reactions as a function of time. Changes in peak height and peak area can be used to calculate values related to reaction kinetics. Time course information is saved and displayed in 3D (bird's eye view) or in a contour plot. The scan interval is dependent on resolution, number of scans, and mirror speed. The fastest speed under a 16 cm^{-1} resolution and a mirror speed of 9 mm/s is 7 seconds for 1 accumulated scan.



Gas Cell

Gas cells are used for analysis of gas samples, and the path length is selected based on the concentration of the samples. Gas cells with short path lengths of 5 or 10 cm and long path lengths of 10 m or more are available.



5 cm Gas Cell



Long-Path Gas Cell

T2SL Kit

Use a high-sensitivity T2SL detector for analyses where a large amount of light is not available, such as monomolecular film analysis on metal substrates, high-speed reaction tracking, and low-concentration gas analysis using a gas cell with a long path length. The kit installs an T2SL detector on the IRTracer-100. Switching between the standard DLATGS detector and the T2SL detector is performed automatically from LabSolutions IR. In addition, the kit has a built-in liquid nitrogen sensor to terminate current flow when the detector element is not being cooled, thus protecting the T2SL detector.



This product is certified as Shimadzu's Eco-Products Plus.

*Energy savings: 34 % reduction as compared to the previous model

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