



Thermo Scientific Nicolet iN10
FT-IR Microscope

Infrared microscopy **with confidence**

iNtuitive • iNnovative • iNtegrated

Thermo
SCIENTIFIC

Thermo Scientific Nicolet iN10 FT-IR Microscope

The Infrared Microscope that Delivers Answers

- *Analytical Services*
- *Quality Control*
- *Forensic Science*
- *Materials Science*

The Ideal Instrument for Industrial and Analytical Investigations

- *Contaminant Identification*
- *Failure Analysis*
- *Competitive Analysis*
- *Process Support*

You don't need to be an expert microscopist to evaluate even the smallest sample with the Nicolet iN10 infrared microscope.



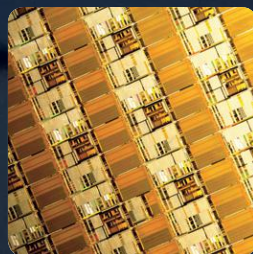
Polymers



Paints



Packaging



Microelectronics



Inks & Pigments

Infrared Microscopy with Confidence

The Thermo Scientific Nicolet iN10 is an intuitive, innovative and integrated infrared microscope offering the installation simplicity of a stand-alone spectrometer with outstanding performance and superb spectral data quality. The Nicolet iN10 infrared microscope redefines ease of use unlike any other microscope on the market.

- The Thermo Scientific™ Nicolet™ iN™10 enables analysts, technicians, and scientists to conduct investigations without requiring expertise in infrared microscopy. However, experts will delight in the performance and flexibility, getting to answers fast.
- If you can see the sample area with your naked eye, you can analyze it with our room temperature system (*no liquid nitrogen needed*).
- As your microanalysis needs change, you can add capabilities for surface analysis, chemical mapping or the highest sensitivity experiments.
- The Thermo Scientific™ Nicolet iZ™10 FT-IR module expands your sampling capabilities from micro samples to bulk analysis with minimal investment. You can add the module at any time.

Expand your Analytical Capabilities

No matter what type or brand of infrared spectrometer you use today, you can easily integrate the Nicolet iN10 microscope into your laboratory. The Nicolet iN10 is completely stand-alone and does not impact your FT-IR spectrometer workload. And, no matter what FT-IR software you use today, you'll be amazed by the speed with which Thermo Scientific™ OMNIC™ Picta™ software drives you to the answer.

The ideal instrument for analytical services, materials science, and academia

Polymers, rubbers, packaging, paints, coatings, compounding, microelectronics, pharmaceuticals, cement, cosmetics, textiles, fibers, pigments, paper chemicals, inks and adhesives are only a few of the materials that can be investigated by using the Nicolet iN10 FT-IR microscope.

Inspired by your recommendations, the Nicolet iN10 redefines what an infrared microscope is and how you use it.



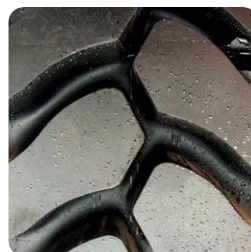
Fibers



Pharmaceuticals



Cement



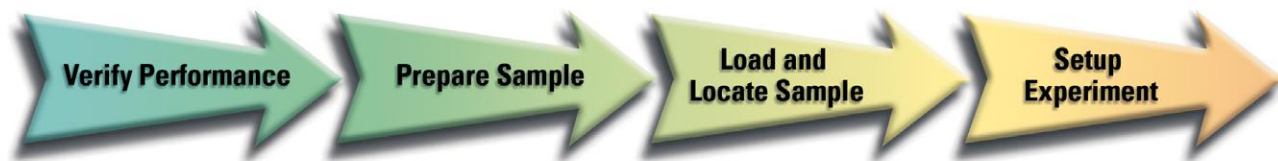
Rubbers



Cosmetics

These are only a few of the materials which can be investigated by using the Thermo Scientific Nicolet iN10 FT-IR microscope.

Sampling Made Easy



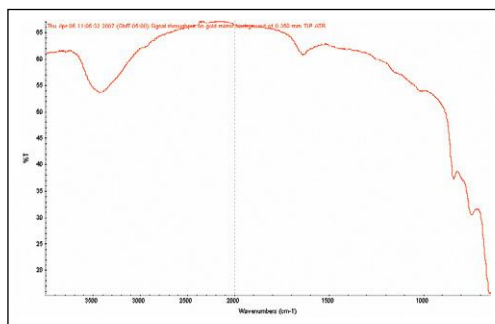
Sample Preparation

Every Nicolet iN10 microscope comes standard with a sample preparation kit that includes:

- Slide holder plates with built-in locations for background collection
- Transmission slides and BaF₂ windows
- Reflection slides with numbered spots
- Microscopic particle handling tools
- Blades, roller and knives for thin sections



Extend Your Analysis with Micro-ATR



Germanium Tip ATR throughput versus reflection from gold.

The germanium Slide-On Micro-Tip ATR accessory expands the analytical capabilities of the Nicolet iN10 microscope to many types of samples including:

- Trace evidence
- Coating, fibers and particles
- Cross sections embedded in resin
- Paper documents (ink analysis)
- Particles in recessed areas



This ATR's germanium crystal is multi-coated to guarantee a minimum throughput of 50% and it has a robust design to allow surveys while in contact with the sample, as well as a practical slide mount for ease of cleaning. The precise and robust mechanism guarantees perfect repositioning of the crystal. The 350 μ m diameter micro tip offers a perfect balance between small contact area and high durability.

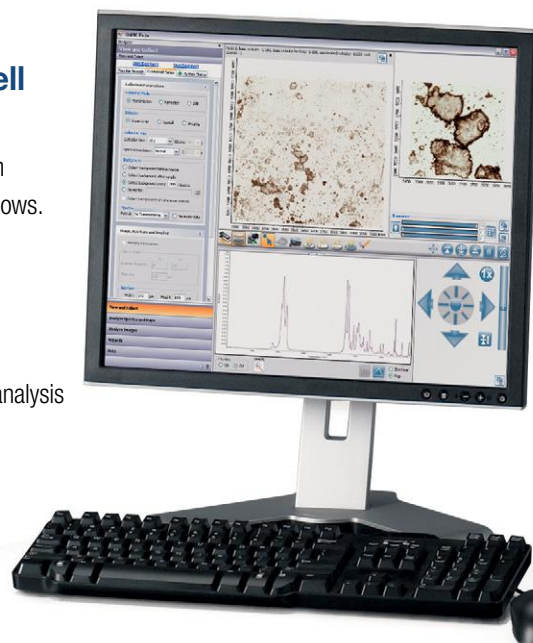
Transmission Analysis with Micro-compression Cell

The compression cell is used to prepare samples for transmission analysis by reducing their thickness, while holding them firmly in place:

- Laminate films and multilayer coatings
- Fibers, particles and inclusions
- Powder crystals

The compression cell can be used with NaCl and BaF₂ windows, or with specially designed flat diamond windows. The compression ring uses a rotation-free design.

- Highest compression factor with diamond windows
- Best performance in transmission analysis
- Maximum durability and hardness (diamond)
- Flat surface for comfortable viewing through diamonds



Performance Verification

Collect Data

Get Answers

Report with
Confidence



System Performance Verification

Performance verification is very important in pharmaceutical, forensic science and industrial laboratories. The Nicolet iN10 system performance verification option supplies all the tools need for your quality assurance program.

The Nicolet iZ10 FT-IR module is equipped with a fully independent validation wheel, for total system qualification and performance verification.



Verify System Performance, Consistently

- NIST traceable, serialized polystyrene standards for transmission, reflection and ATR
- Automated ASTM E1421 Validation method performance tests
- Quick release validation plate for manual or motorized stage
 - Gold mirror for reflection reference beam collection
 - Transflectance polystyrene for reflection testing
 - High thickness polystyrene for ATR testing
 - Polystyrene film for transmission testing
 - Transmission reference beam collection



The performance verification quick-release plate used with Thermo Scientific™ ValPro™ software and a motorized stage provides one-click confidence in even the most regulated environment.



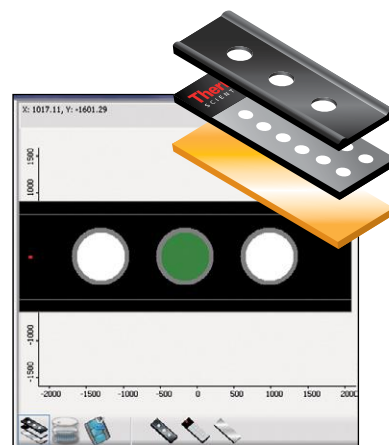
Nicolet iN10 microscope with
Nicolet iZ10 FT-IR module.

Intuitive

Loading and Locating Samples Made Easy

Packed with features to make sample handling fast and comfortable

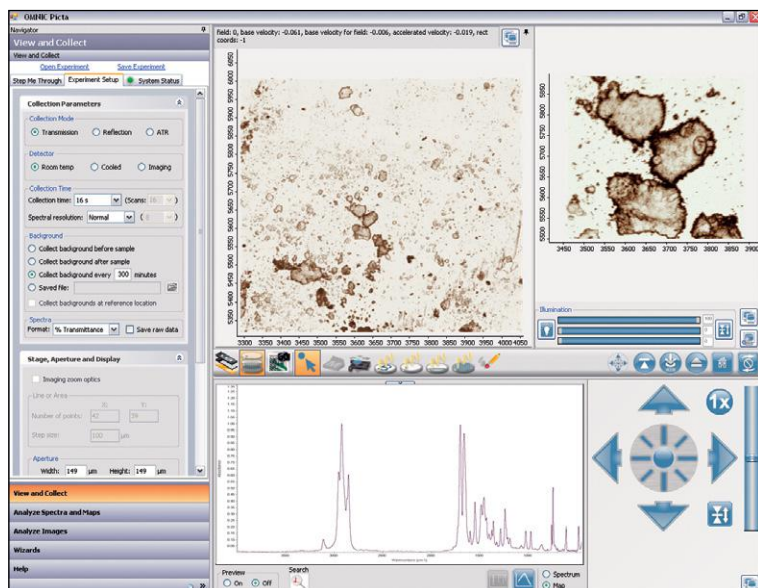
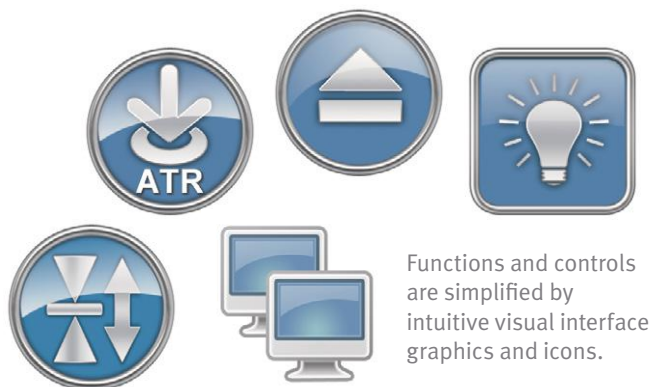
- Convenient, rotatable, sample holder inserts for all standard sampling formats
 - Mirrored or low-e glass slides
 - Ridged insert for ATR
 - Infrared window holders
 - Compression cells
- Permanent, fixed spectral background locations saves time – always available and collected automatically
- Unique *Slide-View* feature, a motorized stage rapidly positions the sample at the correct position and focus using only one click of the computer mouse



Intelligent Experimental Set-up

We built the Nicolet iN10 to let you set up experiments smoothly. Assisted by OMNIC Picta software, you will be able to drive your instrument with no guesswork. No matter how experienced you are in FT-IR microscopy, OMNIC Picta saves you valuable time.

- Fully automated optics
- Error free operation
- Simple user interface



Designed to be task-oriented, OMNIC Picta presents a highly visual interface of the microscope, and directs the Nicolet iN10 through a series of operations designed to get the analysis done logically, simply and quickly.

OMNIC Picta Wizardry

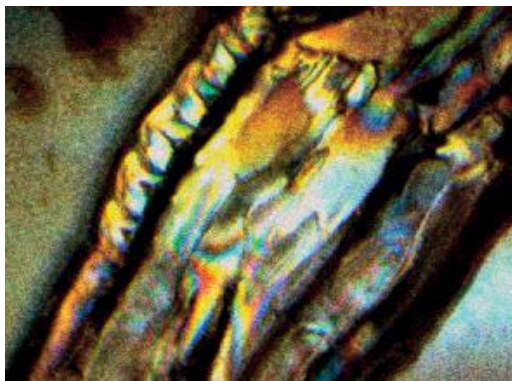
- **Step-me-through guidance** – Unsure where to start? Follow on-screen step by step suggestions
- **LIVE spectral preview and search** – See your results continuously updated while moving the sample
- **Fully automated collection** – Define unlimited unique sampling points for fast multipoint analysis
- **Automated analysis and reporting** – Choose among OMNIC Picta Wizards with specific workflows for the most common projects including cross-sections, random mixtures, isolated inclusions, and scattered particles

Thanks to its intuitive interface, you don't need to be an expert microscopist to get answers with the Nicolet iN10.

Innovative

The groundbreaking design of the Nicolet iN10 microscope delivers truly useful IR microscopy into the everyday laboratory. High optical performance and seamless user interface quickly provide answers with the confidence you need.

Designed to Provide Answers...



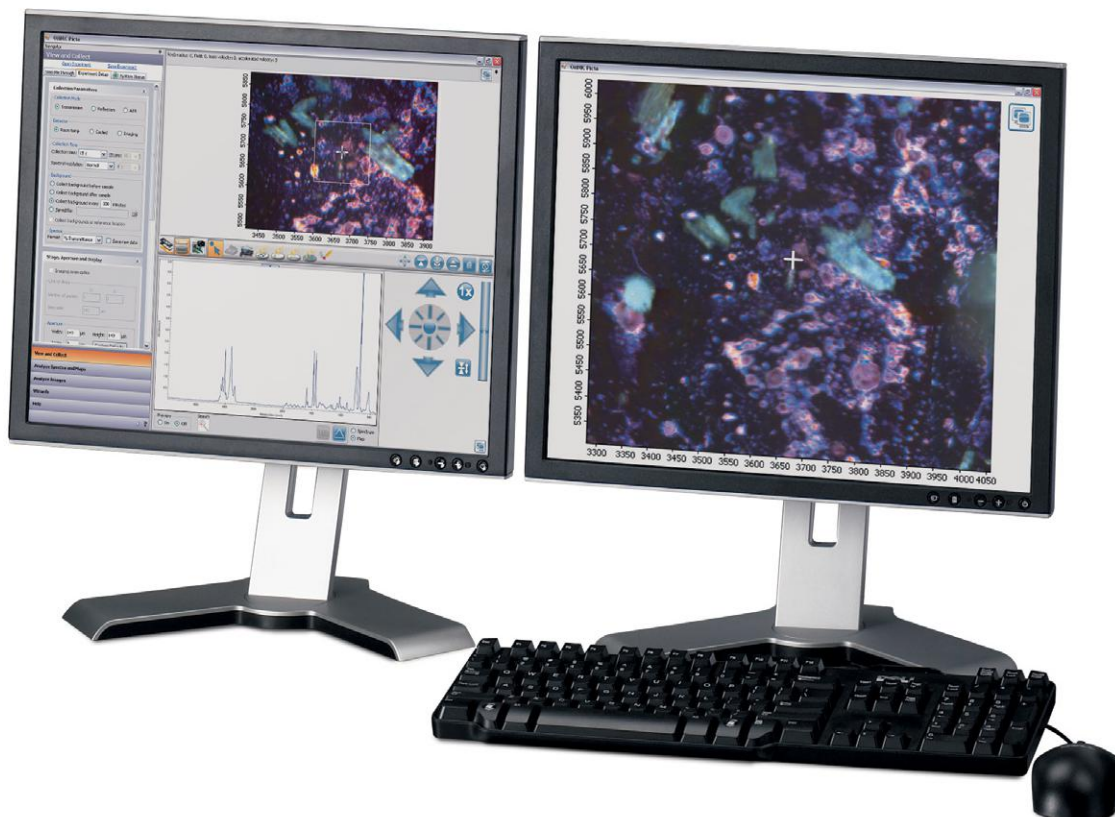
Let the Nicolet iN10 provide the best focus and illumination for you

- Load the sample and *drive*
 - View sample image on one monitor
 - Control IR microscope operations on a second monitor (similar to SEM operation)
 - With one mouse click, drive the microscope straight to the sample area you want
- A unique real-time microscopic experience
 - See the area of interest
 - Preview the spectral result
 - Search libraries in real time, even when the sample is moving
- Get answers, not just results
 - Identify materials
 - Measure sample dimensions
 - Calculate distributions

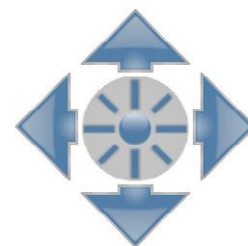
...With a few clicks of the mouse

...with the Confidence You Need

Forensics labs, pharmaceutical labs and all regulated laboratories must ensure with the utmost confidence that the answers they provide are the correct answers. The Nicolet iN10 FT-IR microscope is the perfect partner for any regulated and quality driven environment.



The Contact Alert gauge prevents any damage to your ATR crystal, and applies constant pressure across the sample location, ensuring data consistency and better quality results.



The virtual joystick provides better flexibility and operating ease. Speed and acceleration are continuously variable, matching how you survey the sample.

Export the Nicolet iN10 digital CCD camera image on a second screen, and make your infrared microscopy analysis a truly enjoyable experience, every day.

Integrated

Take Advantage of the Nicolet iN10 Microscope's Integrated Design

- Integrated infrared optics provide more IR energy to your sample (compared with spectrometer-based systems).
- Optical efficiency allows you to analyze samples as small as 50 microns with a room temperature detector (liquid nitrogen not required).
- Your microscope is always ready to use, even when a liquid nitrogen system becomes depleted.

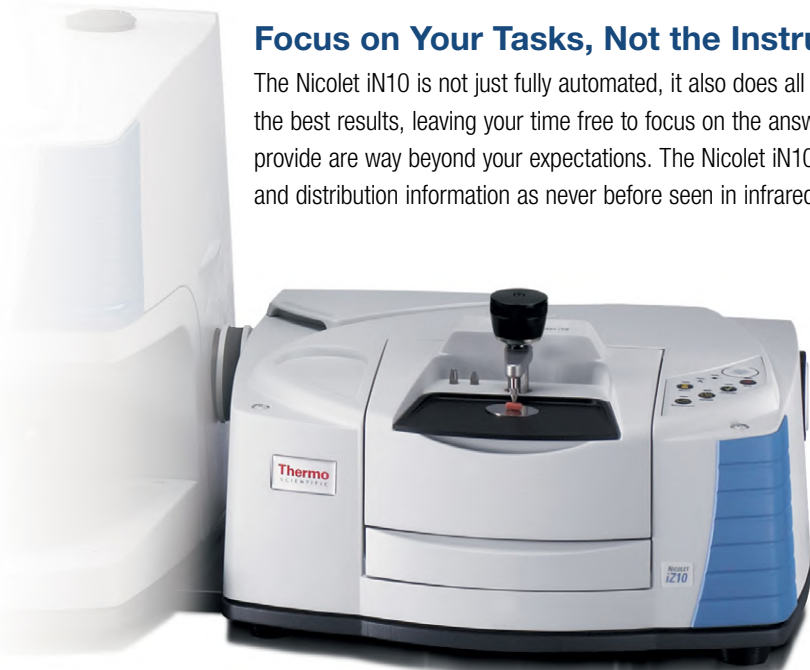
Optimize Your Laboratory Needs

- When you add the Nicolet iN10 microscope to your lab, its integrated design saves bench space and protects your budget.
- If you decide to add an FT-IR spectrometer, you now have two options: Get a fully dedicated spectrometer, or add the Nicolet iZ10 FT-IR module to take advantage of the microscope's integrated infrared engine.



Focus on Your Tasks, Not the Instrument

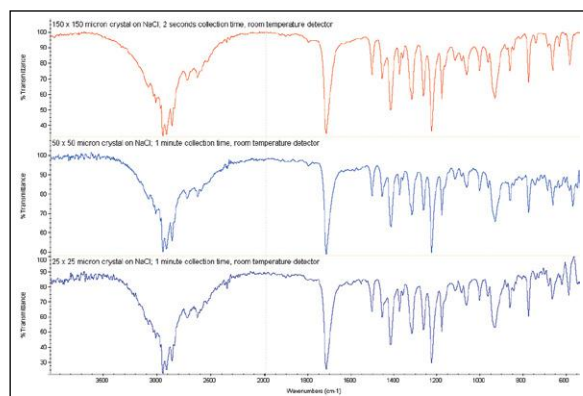
The Nicolet iN10 is not just fully automated, it also does all those things a microscopist would do to get the best results, leaving your time free to focus on the answers. And the answers the Nicolet iN10 can provide are way beyond your expectations. The Nicolet iN10 and OMNIC Picta provide chemical, physical and distribution information as never before seen in infrared microscopy.



If your analytical needs are growing and require a full-sized FT-IR spectrometer capability, add the Nicolet iZ10 external module, quickly, economically and at any time.

Integrated Design Means...

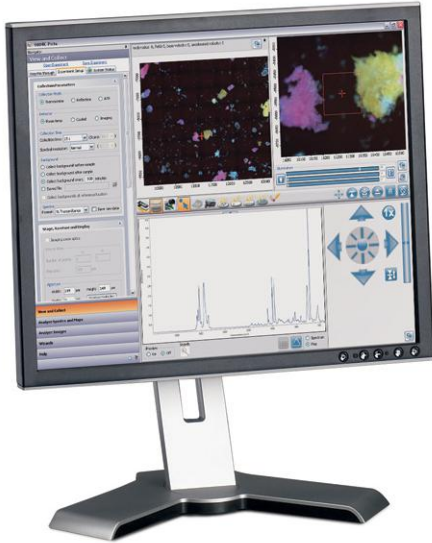
- Minimal training time – thanks to intelligent software
- Error-free assisted operation – so simple you will not believe it
- Choose an experiment type and don't worry about the rest
- Unbeatable sensitivity to quickly pay back your investment



If particles, fibers, contaminants, or defects can be seen with the naked eye, they are large enough to be measured in seconds with no need for liquid nitrogen using the Nicolet iN10 exclusive room-temperature infrared detector.

View with Comfort and Confidence

High quality video capture in infrared microscopy is essential for comfortable viewing, sample observation, and data archiving. With this in mind, we have combined the latest digital imaging technology with an intuitive hardware and software interface.



Crisp, detailed and vivid color image capturing:

Color CCD digital video camera with independent reflection and transmission illuminations.

Simultaneous viewing and collection of the sample:

Ensures that data is consistent with the measured area, as you can confidently see on the display.



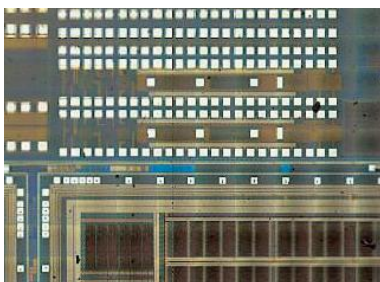
Pharmaceutical crystals illuminated in transmission with visible polarizer. This method aids in the identification of structures and crystalline forms.



The Nicolet iN10 aperture is always delineated in the user interface – before and during collection of samples. This ensures that the infrared information is collected exactly from what is seen. The aperture is independently illuminated, never masking the field of view, nor obscuring the sample image.



Transmission image of a polymer laminate film on a salt window (BaF₂).



Reflection image of a microelectronic device.

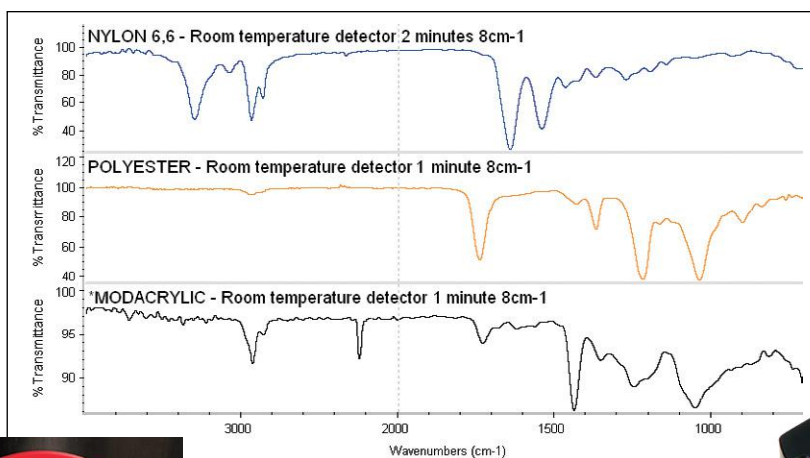


Separate illuminators, software controlled and self optimized for reflection, transmission and aperture.

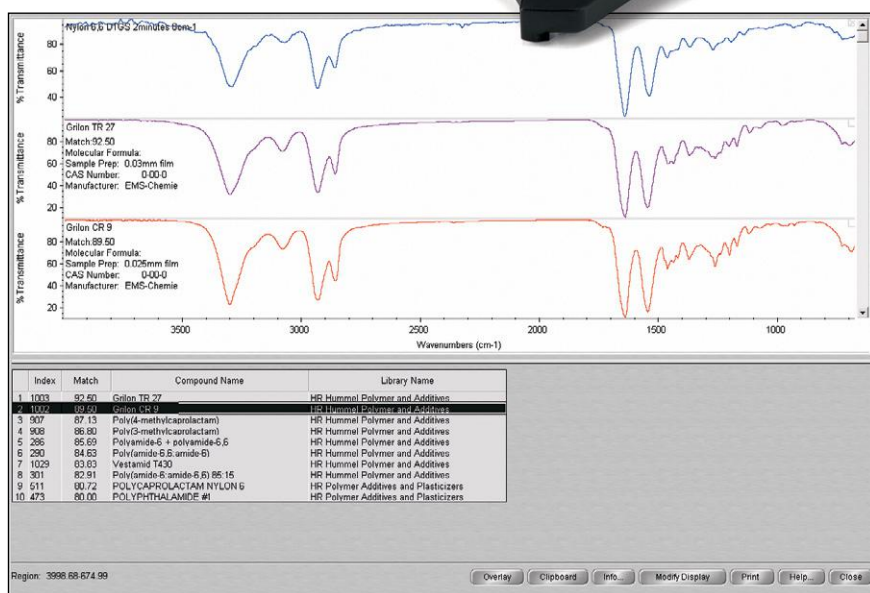
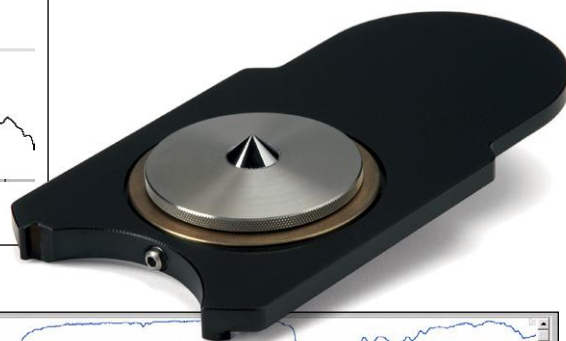
Measure with Power

If You Can See It, You Can Analyze It

The integrated FT-IR engine delivers unparalleled optical efficiency. Every Nicolet iN10 microscope includes an optimized DLaTGS detector for room temperature operations – even with Micro-ATR. Samples as small as 50 microns can be measured without liquid nitrogen cooling. If you can see it with the naked eye, you can analyze it with the Nicolet iN10 microscope.



The Nicolet iN10 microscope's optical design and the superior throughput of the germanium tip-ATR crystal allow analysis of samples as small as fibers, with no need for liquid nitrogen.



The spectral quality delivered by the room temperature detector and the accurate ATR correction of OMNIC Picta allow material identification with high confidence even in the absence of liquid nitrogen.

Unparalleled infrared microscopy with no need for liquid nitrogen, just like an FT-IR spectrometer.

Beyond Typical Limits

Experience Dual Detector Productivity

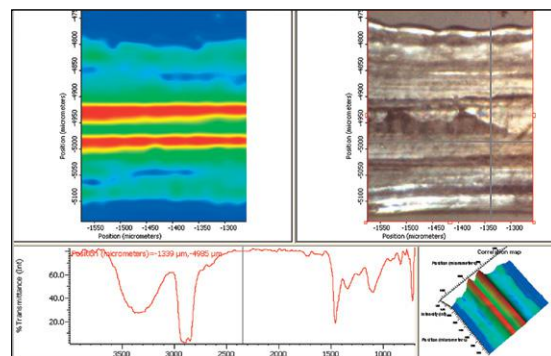
Complement the Nicolet iN10's standard room temperature detector with a high speed, high sensitivity cooled MCT Detector for challenging samples and rapid results. Fast scanning, incredible signal-to-noise, and maximum spatial resolution expands your capabilities for extremely small or complex samples.

Unlock Automated Operations with the Motorized Stage

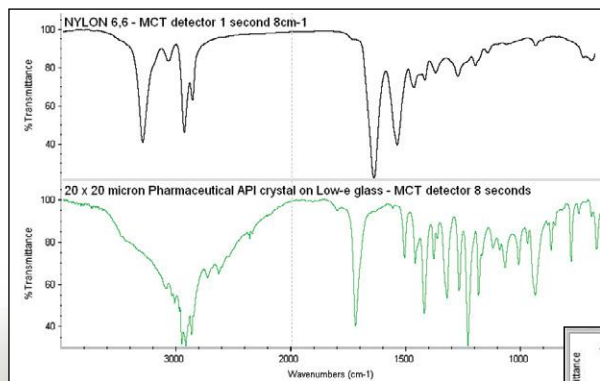
Enjoy the full power of OMNIC Picta to guide analyses under computer control. Run multi-point analysis routines and collect chemical images unattended. With OMNIC Picta, even common data reduction steps are part of the Wizard workflows.

Stretch Limits with Micro-ATR

The Nicolet iN10 micro-ATR is a slide-on germanium tip with extraordinary sensitivity for challenging sample preparation situations and smallest samples. Using the physics of immersion optics, the micro-ATR extends spatial resolution beyond typical diffraction limits. The slide-on technology features robustness, easy cleaning and inspection, and a large, anti-reflection coated optical coupling surface for high infrared efficiency. OMNIC Picta completely automates contact pressure for single point analysis and ATR mapping.

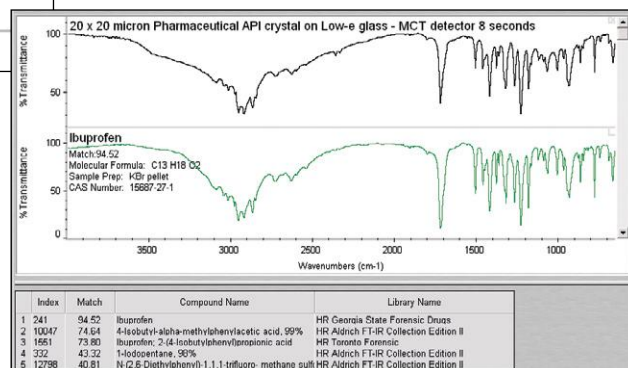


High sensitivity options push spatial resolution below 10 microns



Top: spectrum of a single Nylon 6,6 fiber collected in only one second with micro ATR and MCT detector.

Bottom: 20 × 20 micron crystal of a pharmaceutical active ingredient collected in 8 seconds with MCT detector. Sample prepared on low-e glass slide, measured in reflection.



The sensitivity of the Nicolet iN10 microscope with MCT detector allows accurate identification of materials quickly prepared on reflective slides, in only a few seconds.

Answers, Not Just Spectra

The Day-to-Day Challenge

When defects occur in your manufacturing process, when suspected counterfeit goods threaten your brand, or when your quality control laboratory rejects a product – your analytical services day has begun.

Tough Questions...

Q What's this "spot?"

Q What caused this material to fail?

Q Why doesn't this material pass final inspection?

Getting to the core of these questions requires an investment in spectral data, the ability to identify mixtures, and the confidence to justify your results. Just getting a good quality infrared spectrum from your sample is not enough!

The Nicolet iN10 with Thermo Scientific™ OMNIC™ Specta™ software creates a unique combination of infrared microanalysis and spectral identification, guiding you through locating the analysis area, identifying the material, and certifying your assumptions.



OMNIC Specta provides innovative identification and interpretation tools and an unique expert knowledge base. It converts all of the data on your hard disk into an always-ready database and includes a standard collection of 9000 spectra that enables you to efficiently and effectively identify materials. And when even the microscope spatial resolution reaches its limits, OMNIC Specta adds the power of identifying mixed compounds with a mouse click.

...Definitive Answers

A OMNIC Specta improves your lab's problem solving skills and maximizes the Nicolet iN10 microscope's analytical power.

A OMNIC Specta protects and improves the satisfaction of your customers.

A The Nicolet iN10 and OMNIC Specta reduce inconsistent product quality and assist in mitigating product recalls and their related costs.

...Secure Answers

Standard on your Nicolet iN10 microscope is a collection of over 9000 spectra. Using OMNIC Specta, you now have the ability to confidently find answers with:

- Automated qualitative and semi-quantitative analysis of pure compounds and mixtures
- Comprehensive search and interpretation functionality
- Expert knowledge base
- A database of every spectrum collected and stored on your computer

Get the highest confidence from infrared identification.

Answers, Not Just Maps

Beyond Automation

Our customers asked for a simpler way to get answers. Automation alone is not a solution. The Nicolet iN10 microscope, motorized stage, and OMNIC Picta user interface combine to drive you straight to information you can use.

Particle Analysis

How many particles are there?

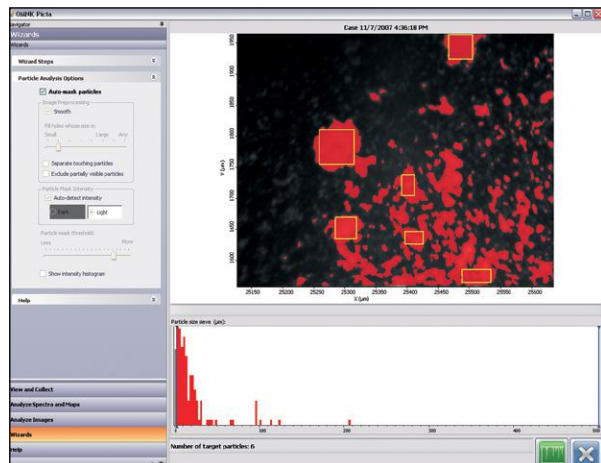
How large are the particles?

Are they all of the same nature?

Only the Nicolet iN10 infrared microscope can do this:

- Find the particles by sieving according to size
- Measure the particle's dimensions
- Set the appropriate aperture to collect data
- Collect data and reference backgrounds
- Identify particles and classify them
- Regroup the information as materials distribution percentage, number and size

Do you still think automation is enough?



Multiple Compound Structures

How many compounds are there?

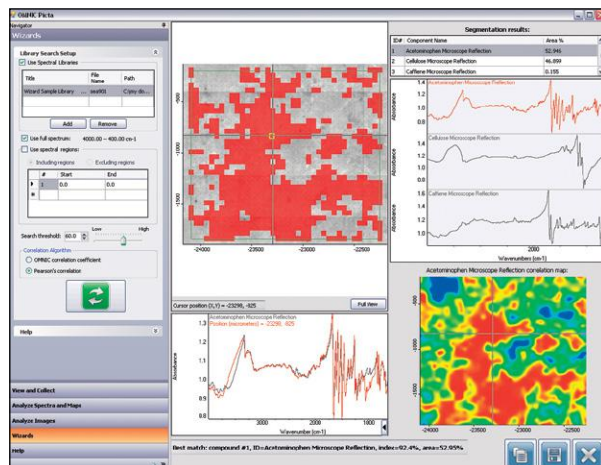
How are they distributed?

What is the relative percentage of each one?

Once your map acquisition is complete OMNIC Spectra:

- Finds similarities within your map
- Creates chemical maps for each class identified
- Calculates the total area of each class
- Identifies the compound of each class in your libraries

Still think simple mapping is the answer?



Inclusions

How to identify them?

How to remove the bulk information?

Need to delaminate?

Let the Nicolet iN10 do all the work:

- Measure the bulk and the inclusions
- Extract spectra of inclusions
- Identify the compound of each embedded species

Do you want to minimize your sample preparation chores, including delamination?

Get the full picture from particle and multi-compound analyses.

Nicolet iN10 – Microscopy Redefined

The Thermo Scientific Nicolet iN10 FT-IR microscope is integrated, innovative and intuitive beyond what you have come to expect from an infrared microscope. The Nicolet iN10 redefines microscopy; an instrument entirely inspired by you.

Integrated FT-IR Microscope

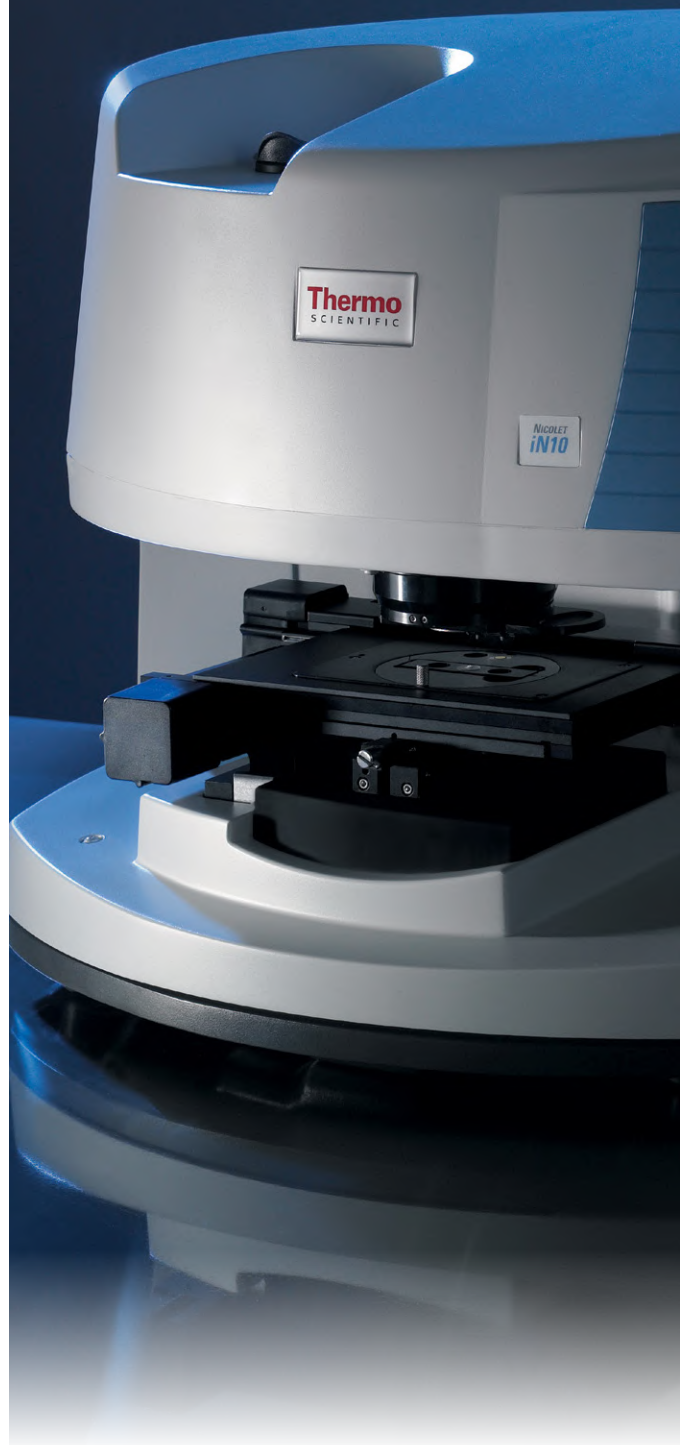
- Integrated design for best performance with no need for an external FT-IR
- Compact footprint, saves laboratory space and budget
- Lowest cost of ownership, no need for liquid nitrogen on samples down to 50 microns

Innovative Microscopy Tools

- Full computer control, even the joystick is now virtual
- Dual monitor operation, for maximum viewing
- System performance verification, fully automated for maximum confidence

Intuitive OMNIC Picta User Interface

- Simplified operation and automated routines for most common micro analysis routines
- Spectral identification of pure and mixture compounds with OMNIC Spectra software



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