

INFRA-READY WHEN YOU ARE



Spotlight™ IR Microscope and Imaging Systems



Your materials characterization challenges come in all shapes and sizes – and as your lab expands and become more centralized, increased sample volumes get to be a challenge as well. Whether you're determining composition or identifying defects in advanced materials, performing pharma QA/QC, supporting forensics teams, or engaging in academic research, you need FT-IR instrumentation that's flexible and easy to operate, getting you ready for whatever comes your way.

MULTIFUNCTION MAXIMIZED

Our **Spotlight™ IR microscope and imaging systems** are engineered to help you meet your challenges, large and small. These systems deliver simple operation that's easy enough for novices to perform, clear software controls for any size sample type, streamlined reporting tools, and the flexibility and sensitivity that make it the perfect addition to any lab setting, in any discipline.

With Spotlight IR microscopy and imaging solutions, all your people can start concentrating on their core responsibility: moving your science forward.

APPLICATIONS:

WHEN YOUR BIGGEST CHALLENGE IS YOUR SMALLEST



Spotlight 150i/200i IR Microscopy Solutions

When analyzing extremely small samples or areas of interest, it's often difficult to get the kind of data that enables better understanding of each sample's material properties. Our Spotlight 150i/200i IR microscopy solutions are the perfect tools for a wide variety of industries and applications, and they allow analysis of much smaller samples than FT-IR spectroscopy alone – in fact, quality spectra can be obtained from sample areas down to the diffraction limit of 10 microns.

The exclusive detector design delivers superior signal-to-noise ratios and a wide spectral range, enabling you to obtain the most information from challenging samples in the quickest time possible. Plus, the Spotlight 200i system can be easily upgraded to provide full FT-IR imaging capabilities.

APPLICATIONS:

SEE WHAT'S NEVER BEEN SEEN BEFORE

Spotlight 400 FT-IR/FT-NIR Imaging Systems

With state-of-the-art technology, intelligent automation, and sophisticated analysis capabilities, Spotlight 400 FT-IR/FT-NIR imaging systems allow you to meet the challenges of an expanding laboratory, generating high-quality, reproducible data from a variety of sample types.

Combining FT-IR high sensitivity and fast imaging with advanced ease-of-use features, these systems enable you to image large sample areas quickly at high spatial resolution, extending FT-IR imaging into new applications. Plus, you can switch between sampling modes – standard transmission, reflection, ATR imaging, and more – with ease, and your images can be collected at high speeds with extraordinary signal-to-noise ratio.

With Spotlight IR imaging you can accelerate product development and quality troubleshooting while aiding process improvements, reducing costs, and increasing competitiveness in advanced materials, pharmaceuticals, biomaterials, forensics, and more.



APPLICATIONS:

Case Study: Determining Lens Coatings

One of the final stages of preparing eyeglass lenses is to coat the lenses with a protective polysiloxane coating. In one case, small contaminants were observed after the coating process. Using an infrared microscope, the particles were identified as synthetically based polyamides.

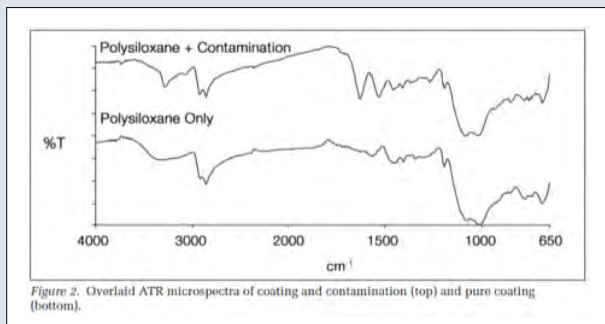
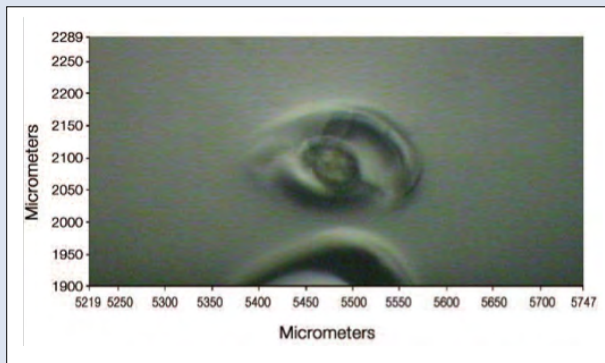


Figure 2. Overlaid ATR microspectra of coating and contamination (top) and pure coating (bottom).

The Right Materials Make All the Difference

It's important that products contain only the precise amounts of the right types of components. That's why manufacturers rely on accurate materials testing – to ensure their products are high quality and contaminant free.

Our Spotlight IR microscope and imaging systems scan and automatically detect impurities in the visible image of a sample and collect the IR spectrum for rapid material identification.

[Read our application note](#) to learn about detecting contaminants on circuit boards.

APPLICATIONS:

Determining Polymer Composition

Products such as food packaging and consumer goods require analytical testing. Laboratories like yours use IR microscopy technology to visualize the chemical composition of these products. With our Spotlight systems, you'll see faster product development and productive troubleshooting, which will help you accelerate product improvements while significantly cutting costs.

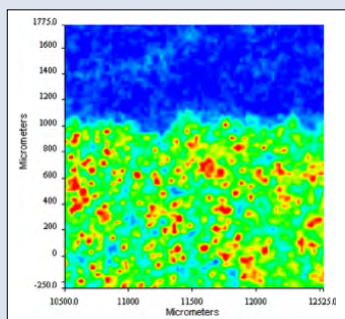
From detecting material defects to understanding compositions in advanced material development to investigating various competitive products, our Spotlight IR microscope and imaging systems do it all.

[Read our application note](#) to learn about rapid characterization of samples using IR microscopy.

[Learn more](#) about our solutions for polymers and plastics.

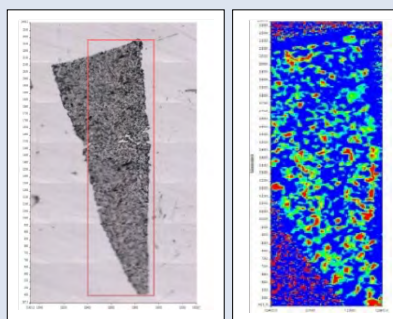
APPLICATIONS:

The following proven examples demonstrate how flexible and accurate our Spotlight systems are.



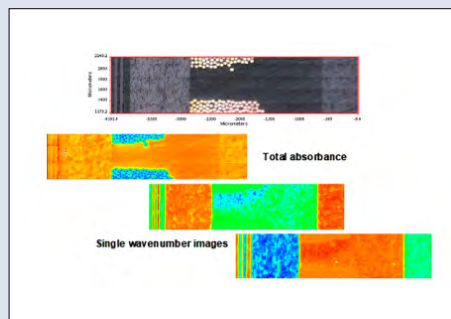
Distribution of Adhesives on Surfaces

Using the Spotlight system's reflectance imaging mode, you can gain deeper insights in just minutes.



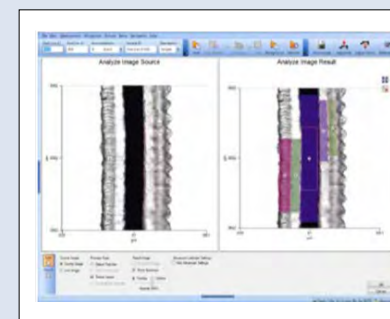
Distribution of Nylon-to-Teflon Ratios

To determine the distribution of nylon to Teflon, a ratio map is created showing the nylon amide peaks to the 1200 cm^{-1} Teflon area.



Distribution of Chemicals

Advanced data handling tools enable simple and rapid depiction of specific chemical distribution in complex samples.



Determining Package Composition

Using the Spotlight 200i instrument's advanced feature-detection tools, you can dramatically reduce analysis time.

The Cure for Pharma Challenges

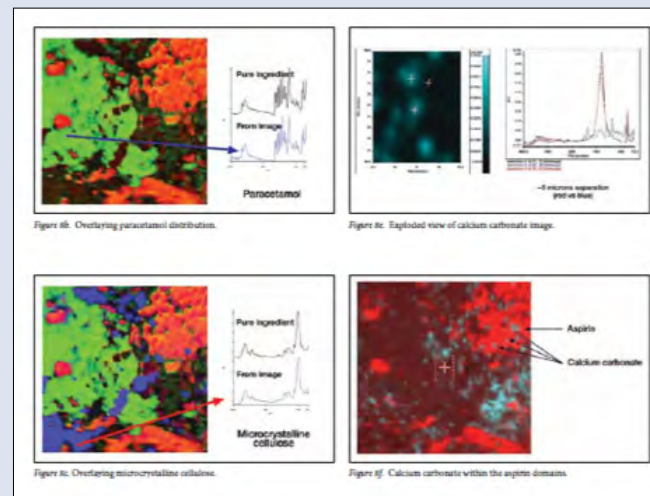
When it comes to testing pharmaceuticals, our Spotlight IR microscope and imaging systems are used in several areas, from formulation development to production troubleshooting to counterfeit investigation.

IR microscopy analysis enables the industry to reduce manufacturing cycle times and product variability for shorter time to market and fewer chances of product failures. You can utilize both standard mid-IR attenuated total reflection (ATR) imaging techniques and NIR direct reflectance to gain deeper insights into ingredient distribution in solid doses.

[Read our application note](#) to learn more about ATR imaging of pharmaceutical tablets.

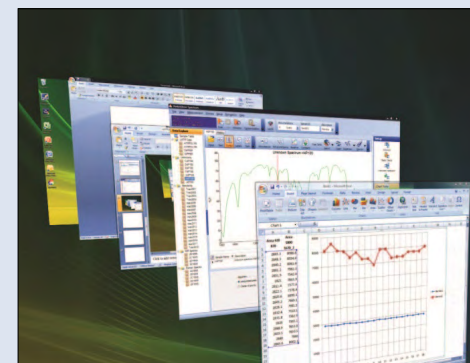
[Learn more](#) about our solutions for pharma QA/QC.

Discover the benefits of our Spotlight systems.



ATR imaging reveals excipient and API distribution in tablets with exceptional clarity and resolution. Using a high-refractive index germanium ATR element, particles less than five microns in diameter are identified from their IR spectra.

Specialized sampling and automated software enable you to attain rapid, simple measurements. Plus, the unique TE-cooled InGaAs detector for NIR delivers ultimate image quality and extended, unattended operation for multiple samples.



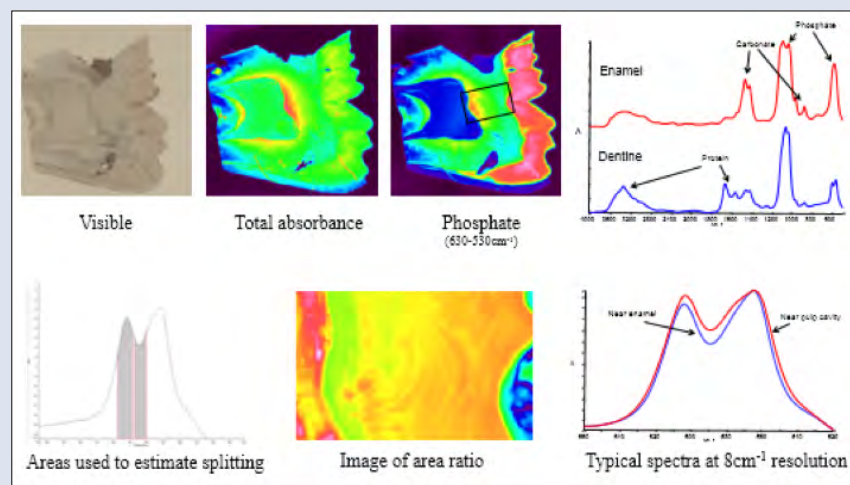
APPLICATIONS:

Pioneering Biomedical Research

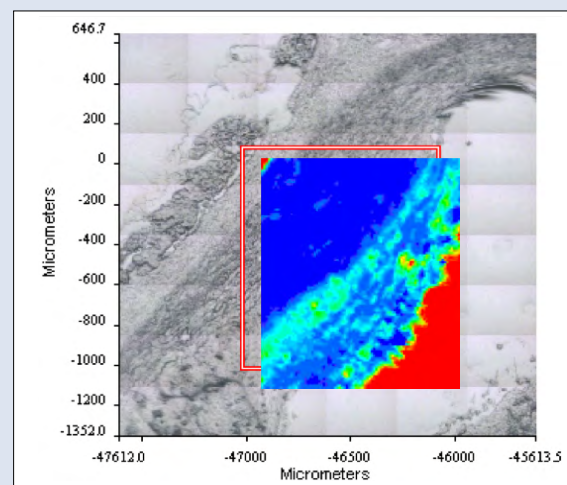
Vibrational spectroscopic imaging is often used in biomedical research because it provides molecular descriptors for histopathology.

Our top-performing, research-grade Spotlight IR microscope and imaging systems, along with their powerful, easy-to-use hardware and software, are ideal for diagnostic development and functional understanding of biological materials.

APPLICATIONS:



Unique long-wavelength imaging with the option to image lower than 600 cm^{-1} is invaluable for inorganic material mapping. Here, dental implant materials can be characterized in tooth cross-sections.



Arterial cross section showing an image overlaid with IR lipid/amide false-color image.

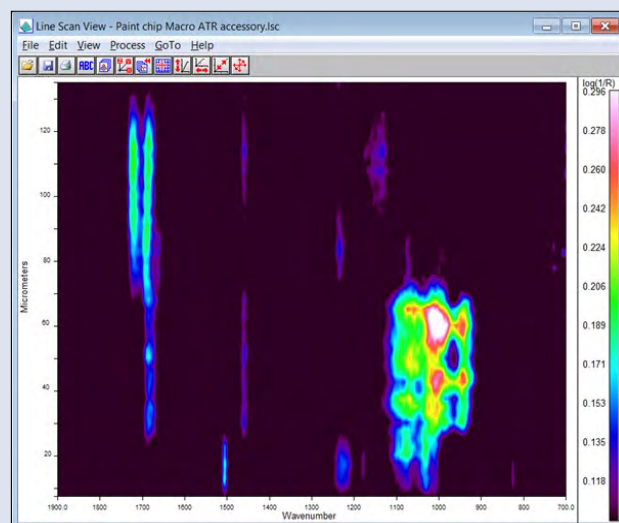
Your Partner in Solving Crime

IR microscopy is an important technique for evidence analysis at the scene of a crime. Samples including single fibers, paint chips, and other residues come in many different shapes and sizes, and adaptable sampling and analysis methods – coupled with dependable performance – are keys to success.

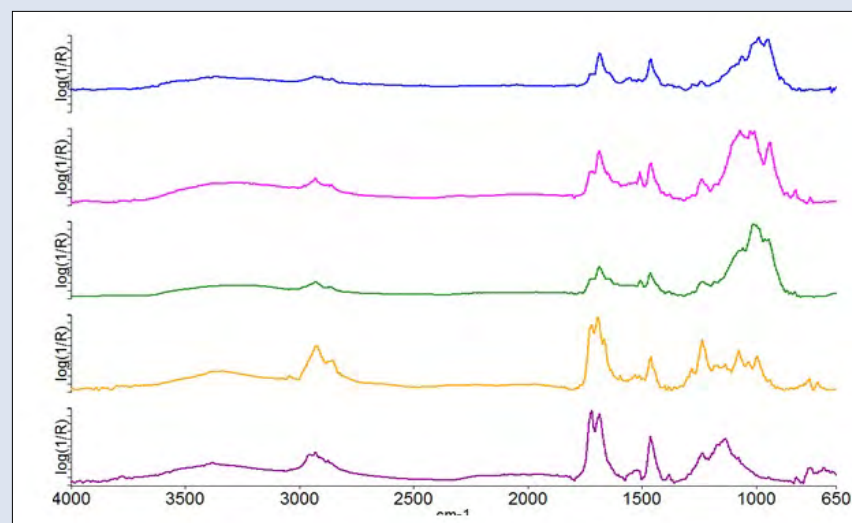
Spotlight systems with micro- and macro-sampling enable you to choose the optimum method for your unique sample. This ensures dependable results, every time.

[Read our application note](#) to learn about analyzing paint chips using an automated IR microscope.

APPLICATIONS:



ATR linescan data for paint chip.



Spectra obtained for the different layers in the ATR experiment.

Every Particle Tells a Story

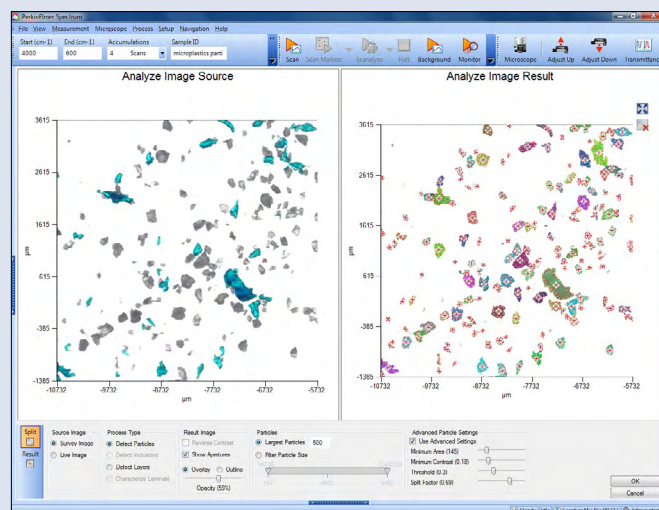
When it comes to identifying microplastics, our Spotlight systems are commonly used in laboratories across the globe. Scientists have begun developing routine methods to characterize microplastic particle samples down to 10 microns or less.

Our Spotlight 400 system provides the ability to perform both automated single-particle analysis and IR imaging, allowing every particle to be identified and characterized.

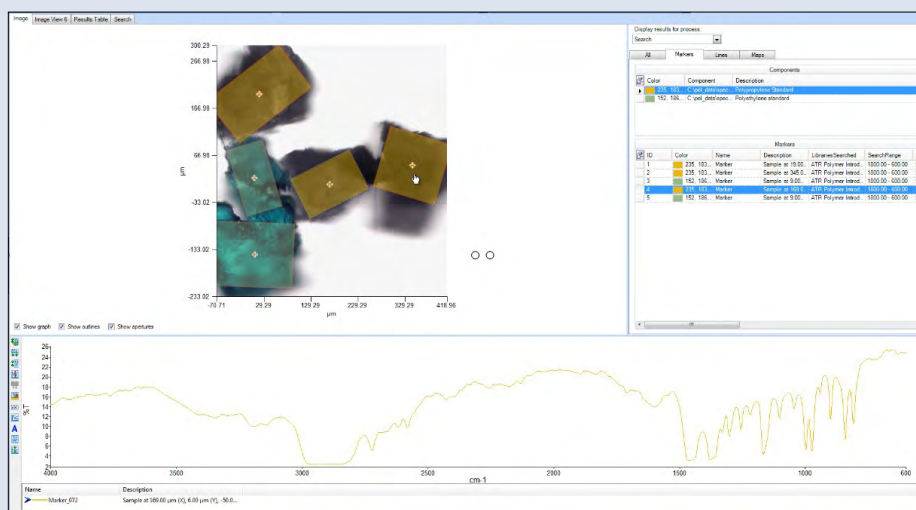
[Read our application note](#) to learn about detecting and identifying microplastic particles in cosmetics.

[Learn more](#) about our solutions for microplastics analysis.

APPLICATIONS:



The Analyze Image software routine detects the particles in Product 1.

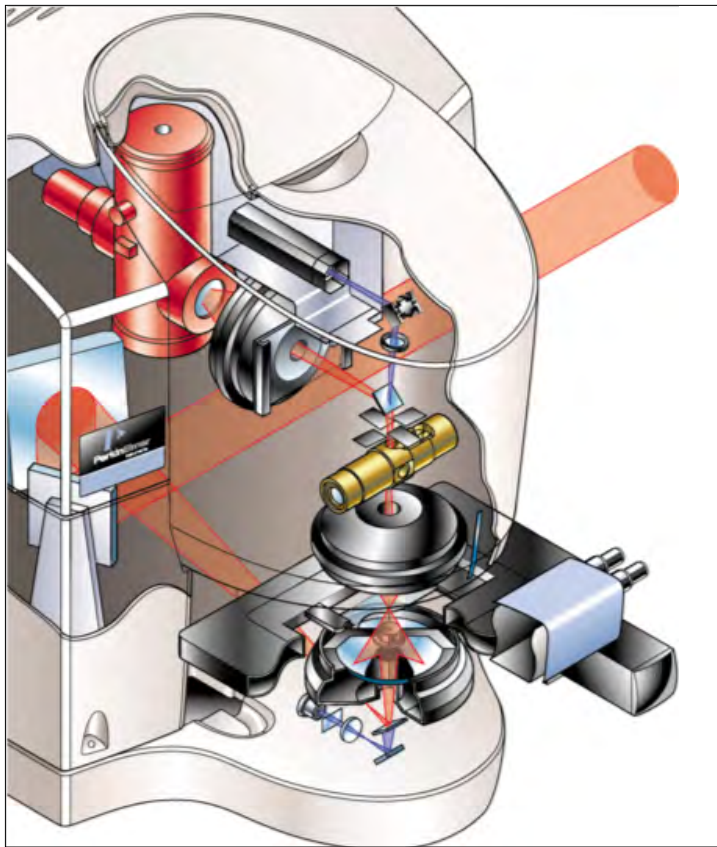


The results screen reveals the detection and identification of particles.

SPOTLIGHT ON TECHNOLOGY

Our Spotlight FT-IR systems' optical technology is designed for highest quality IR spectra, using high-precision reflecting optics throughout. It delivers IR and visible magnifications optimized for minimal aberrations, while providing the best practical balance between field of view, working distance, and numerical aperture. And it's simple to use, because there's no need to change optical components between experiments.

[Click below to learn more about our FT-IR technology.](#)



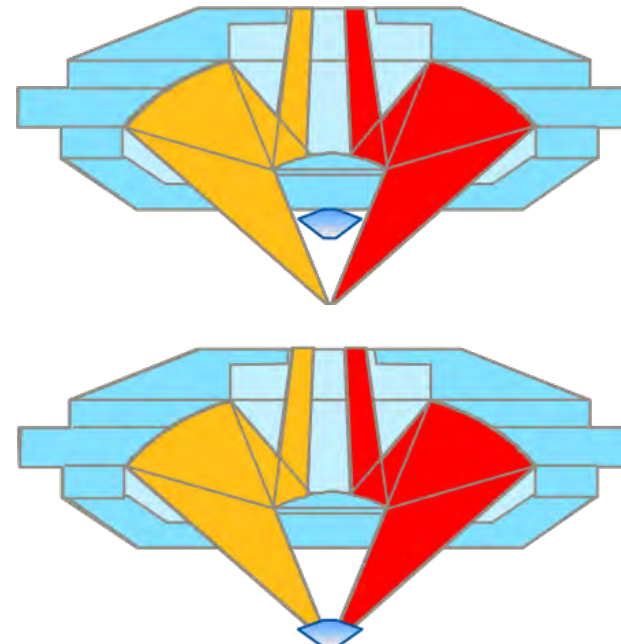
APPLICATIONS:

SPOTLIGHT MICROSAMPLING

Spotlight Microsampling

Our ATR system is fully automatic, so you never have to manually insert and realign the ATR crystal. The built-in suspension support and fast-feedback pressure sensor ensure minimal sample damage with delicate samples and provides faster autopressure adjustment with multiple sample runs.

APPLICATIONS:

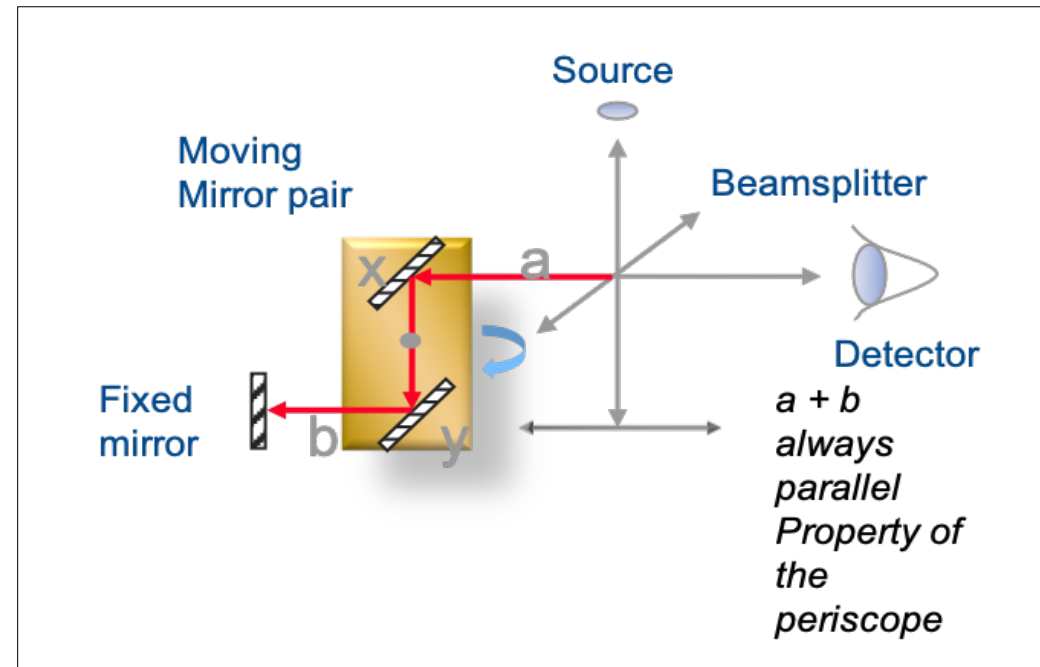


FT-IR Engine

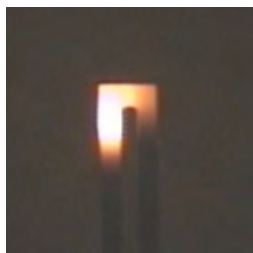
FT-IR ENGINE

The system is loaded with a range of advanced innovations designed to provide optimal performance from whatever configuration you choose, including a fifth-generation, fixed mirror-pair Dynascan™ interferometer that's immune to the effects of tilt and shear and requires no dynamic alignment mechanisms. And our unique electronic hotspot stabilization increases measurement stability and extends source lifetime.

DynaScan Interferometer:



Hot Spot Stabilization



Conventional Source

APPLICATIONS:

Macrosampling Options

Whatever your sample, our Spotlight systems have an accessory to address it. Its optical flexibility allows you to add from an array of smart, zero-alignment accessories – and they're interchangeable, enabling you to create entirely new configurations, maximizing instrument uptime. And an extensive range of third-party accessories is available to meet additional requirements.

[Learn more about our Spectrum 3 FT-IR spectrometer here.](#)

MACROSAMPLING OPTIONS

1. Solids autosampler

Autosampler for tablets and powders featuring 30 positions and a patented custom mold for optimum reproducibility

2. Diffuse reflectance

Simple analysis of powders and difficult-to-measure solids

3. Liquid sipper

Eliminates manual cell filling and uses built-in software-contamination checking to reduce analysis error

4. HATR

Recognizes top-plate crystal material, angle, and serial number and displays sample application force

5. TG-IR interface

For hyphenated FTIR-TGA applications that analyze the breakdown products from decomposition and combustion

6. & 7. NIRA

Provide NIR reflection and transfection with no manual sample preparation, with self-referencing (interleaved) functionality

8. UATR

Recognizes top-plate crystal, number of reflections, and serial number, with unique kinematic top-plate mounting and electronic force gauge

9. Remote liquids probe

Universal interface that ensures compatibility with a wide range of probes and facilitates decontamination

10. Remote solids probe

Samples powders or solids up to 10 meters away from instrument, with advanced handset with scan trigger and LCD interface for continuous remote operation

11. Heatable transmission module

Allows easy elevated temperature measurements on samples in the mid-IR or near-IR regions

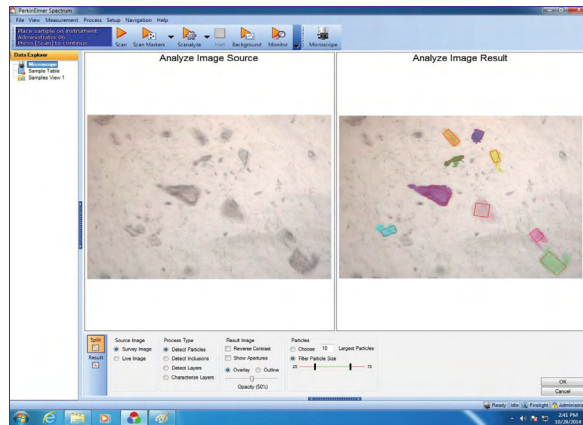
12. EGA 4000

Delivers full TGA performance inside a high-performance, research-grade FT-IR spectrometer

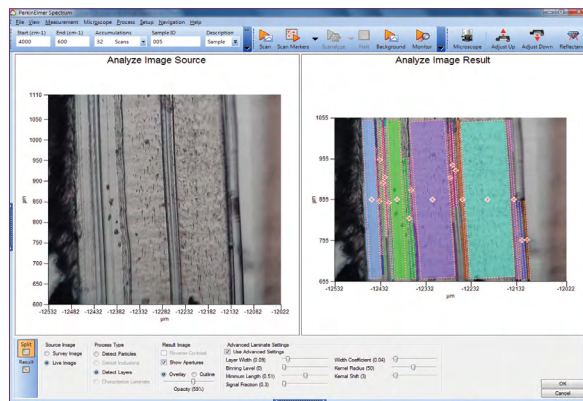


APPLICATIONS:

SOPHISTICATED SOFTWARE EXCEPTIONAL RESULTS



Intelligent particle-finding routine reduces setup times from minutes to seconds.



Faster laminate analysis enabled by automatic region-of-interest determination.

With 21 CFR Part 11 compliant Spotlight software, advanced technology provides everything from automated setup to complete characterization – in record time.

For example, intelligent region-of-interest finding makes time-consuming manual setup for analysis of multiple particles and layers a thing of the past, so it's perfect for finding contaminant specks and analyzing powder samples. Automated laminate analysis routines quickly locate features and set optimum scanning conditions for the sample viewed. Plus, you can combine analyses with point scanning for multiple sample points – so you can deliver results, not spectra, for a multitude of operations.

Automatic ATR

Performs multiple sampling modes, including single point, line scans, and maps, in a single experiment – with minimum sample preparation, while maintaining spectral integrity and quality

Configurable Validation Routines

Speed instrument performance validation tests, so you're always ready for operation

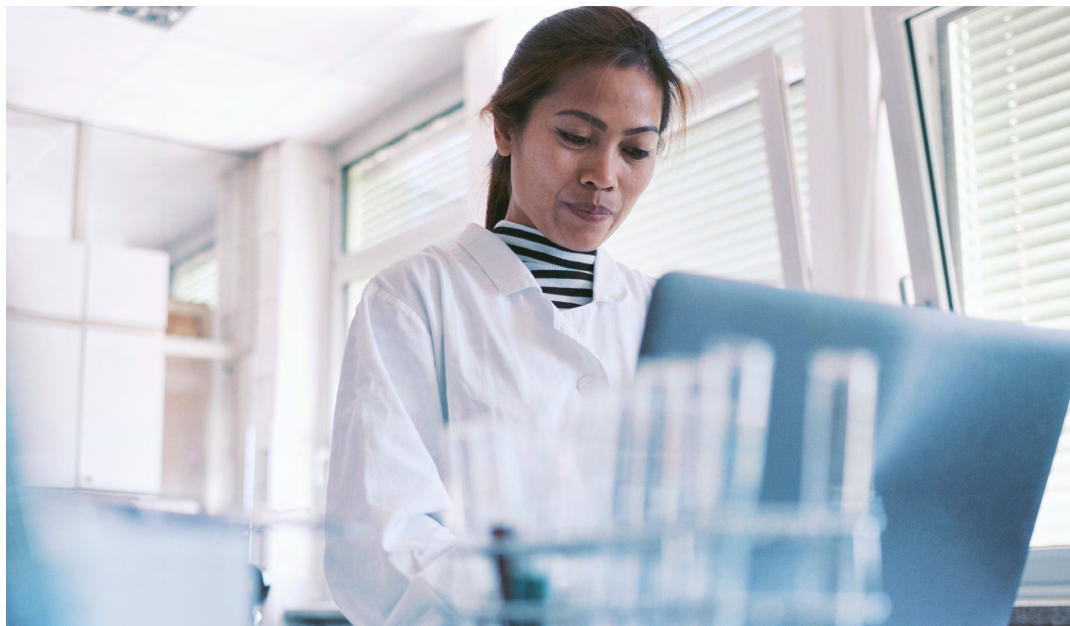
Automatic Beamsplitter

Can quickly reconfigure the system for multispectral range operation

APPLICATIONS:

SMARTER QUESTIONS FASTER ANSWERS

Looking for industry-leading informatics software? We've got that, too. Overcome challenges like volatile pricing, increased environmental regulation, and data complexity. Browse our suite of informatics software and improve collaboration, spark R&D innovation, and deliver predictive analytics in real time.



APPLICATIONS:

ChemDraw®

Accelerate the drawing and publishing of chemical and biological compounds.

Signals™ Notebook

A cloud-native electronic lab notebook that captures, reuses, and shares experimental data.

E-Notebook™

Document analyses and leverage the knowledge gained from previous experiments.

Lead Discovery

Discover actionable insights by seamlessly integrating chemical and biological molecules with activity results.

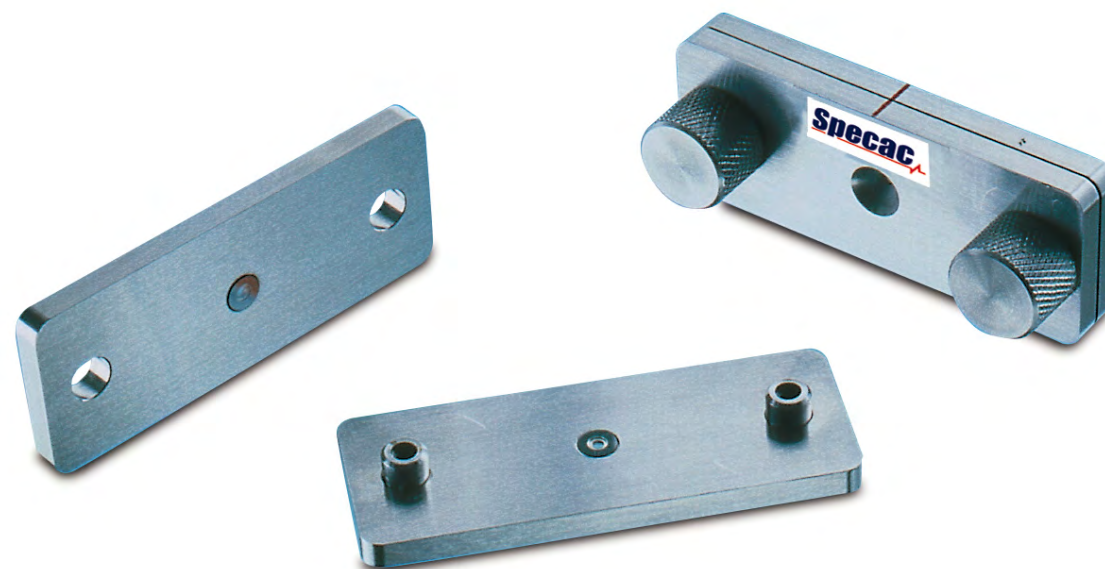
TIBCO Spotfire®

Quickly analyze disparate data from multiple sources and create a complete picture of what's happening in real time.

GET THE MOST OUT OF YOUR INSTRUMENTS *AND* YOUR ANALYSIS

You invest great efforts into your research – and we do the same with our consumables and accessories, tested and validated to fit your IR analysis needs. That's why we developed a full range of quality consumables designed with your applications in mind.

Browse our consumables portfolio for products that offer reliable performance, control of operating costs, and maximized uptime of your instruments. Like our trusted instruments, our consumables offer the best performance over and over.



APPLICATIONS:

COMPLETE SERVICES FOR INCREASED PRODUCTIVITY AND EFFICIENCY

Today's lab leaders are facing several challenges, from tighter deadlines to increased budget scrutiny to teams with various degrees of comfort with lab equipment. Time that could be spent getting ahead is utilized on noncore activities.

To help you overcome barriers to success, OneSource® Laboratory Services has built a team of trained scientists and engineers who bring their real-life knowledge to you, helping increase your productivity with recommendations on how to best utilize your assets. With this knowledge, you can get back to your core mission.

Labs of all sizes need to know their equipment will work as expected, every time they turn it on. From contracts and performance maintenance available for our instruments as well as other manufacturers' equipment to full lab asset management delivered globally, we can help you make the most of your important lab assets.

And for labs looking to introduce new equipment and techniques, we offer training at our facilities and at yours.



OneSource Services

- Asset optimization
- Lab environment and instrument monitoring
- Asset location
- Education and training
- Technology and descriptive analysis
- Internet of lab things/lab of the future
- Remote support
- Multivendor services
- Compliance
- Lab support
- IT solutions
- Instrument qualifications

APPLICATIONS:

Multivendor Services

With so many different vendors' instruments in your lab, it can be challenging to ensure everything is being maintained properly. Some labs struggle to get the most productivity and efficiency from all their instruments. Others streamline and simplify workflows to maintain regulatory compliance – and reduce the risk of noncompliance. Either way, you're always scrambling to figure out who to call for service as quickly as possible before you lose too much time...and money.

But what if there were a one-stop service contract option for your lab – from a company with decades of deep-seated multivendor experience – that repaired all your instruments, offered state-of-the-art validation and compliance services, and provided reliable preventative maintenance? There is. That's what OneSource Multivendor Service is all about.



APPLICATIONS:

Information on Educational Services

Whether you are looking for a basic instrument refresher course, simple troubleshooting techniques, general application support, or method optimization, our field application scientists or service engineers will come directly to your lab.

Through education, you will gain knowledge and insights into the latest techniques, not only increasing your confidence, but also unlocking the full potential of your instrument.



For more information on our Spotlight microscope and imaging systems, visit www.perkinelmer.com

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