EXTEND YOUR RANGE AND YOUR SCIENCE

MIR/NIR/FIR

SPECTRUM 3™ Next-Generation FT-IR

PerkinElmer®
For the Better

THIS IS FT-IR REIMAGINED

Analytical and research labs around the world face a continual challenge: uncover deep, meaningful insights that can be *trusted*. Today more than ever before, laboratories need to efficiently analyze a wide variety of samples to accelerate innovation, research, and product development.

That's the power of Spectrum 3™ FT-IR. It balances unparalleled performance and exceptional value in an intuitive, easy-to-use solution – so whether you're a pharmaceutical company developing the next groundbreaking therapy, a manufacturer of innovative polymer-based products, a chemical company performing routine quality control, or an academic institution doing advanced research, Spectrum 3 meets your most complex challenges by delivering:

- Unparalleled value, with our widest IR range in one instrument
- More productivity with fast, superior software and intuitive sample interaction
- Deeper insights with truly integrated and simplified hyphenation
- Easy and secure collaboration from anywhere, anytime, on any device

Spectrum 3: The perfect system to extend your range – and expand your scientific opportunities.

Watch Spectrum 3 In Action

Keep Reading

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UNLEASH THE POTENTIAL OF FT-IR

From routine identification and verification of raw materials to advanced research applications, companies in a host of industries need the flexibility to quickly, confidently, and cost-effectively analyze the widest possible range of sample types.

EXCEPTIONAL PERFORMANCE

MAXIMUM PRODUCTIVITY

UNPARALLELED VALUE

EXCEPTIONAL PERFORMANCE

Spectrum 3 lets you expand the optimum range for your sample analysis with tri-range NIR-MIR-FIR coverage and automated range switching in a single instrument. A wide array of accessories gives you total flexibility to analyze nearly any sample type: solid, liquid, powder, gel, paste, film, even gas-phase sample. An exceptional signal-to-noise ratio and photometric performance assure optimal spectral performance to ensure best-in-class sensitivity. Unravel rapid chemical processes to gain deeper insights into reaction kinetics, while collecting data at speeds up to 100 scans per second.

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Pharmaceuticals

Polymers, Coatings, and Adhesives

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MAXIMUM PRODUCTIVITY

Enhance the power of your analyses and reduce time and effort by acquiring more information from a single run through powerful hyphenation. Run experiments directly from the SmartPanel™ on the instrument without returning to the PC, speeding up routine analyses. And collaborate by accessing IR data from any device, anytime, anywhere, through cloud connectivity.

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UNPARALLELED VALUE

The Spectrum 3 delivers continued service over the long run with the flexibility to configure performance how you want without the need for multiple benches. You benefit from:

- Extended range MIR/NIR variants
- New diode laser option for improved component longevity and reduced cost of ownership
- Incredibly robust and reliable interferometer

And the entire system needs minimal maintenance.

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PerkinElmer® For the Better

FT-IR THAT GOES BEYOND THE EVERYDAY

The challenges you face every day are growing increasingly complex. Futureproof your laboratory against shifting requirements with the versatile Spectrum 3, no matter your application.

PHARMACEUTICALS

POLYMER, COATINGS, AND ADHESIVES

CHEMICALS AND MATERIALS

RESEARCH AND ACADEMIA

SEMICONDUCTORS

PHARMACEUTICALS

With the Spectrum 3 system, you can ensure quality control at every step, quickly screening, identifying, and characterizing raw materials, intermediates, and product formulations and performing counterfeit studies.

From powder to packaging and everything in between, the Spectrum 3 system's array of sampling accessories, combined with exceptional performance throughout the spectral range, ensures that you can confidently develop better, safer drugs.

Application Note: Analysis of Pharmaceutical Raw Materials Using Spectrum 3 FT-IR ▶

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POLYMER, COATINGS, AND ADHESIVES

Compounders and manufacturers need to quickly and accurately analyze plastics, blends, resins, coatings, and adhesives. From materials identification and compositional analysis to monitoring extremely fast curing reactions and gaining insights into kinetics, the Spectrum 3 system is critical to developing better products, faster.

- Up to 100 scans/second scan speed to characterize fast polymerization processes
- Enhanced ATR algorithm for exceptionally accurate spectral results
- Identify multiple polymers and blends with improved searching of legacy transmission databases

Application Note: Measuring spectral changes during curing of cyanoacrylate resins with Spectrum 3 ▶

PerkinElmer® *For the Better*

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SEMICONDUCTORS

CHEMICALS AND MATERIALS

The chemicals industry comprises the manufacture of bulk industrial chemicals as well as a range of fine chemicals where the Spectrum 3 system can be used for:

- Raw materials identification, verification, and QA/QC
- Contaminant identification
- Troubleshooting manufacturing processes
- Quality control of finished products

Accelerate product development and ensure quality control along the workflow. The exceptional performance of the Spectrum 3 FT-IR across the spectral range, together with its vast array of sampling accessories, delivers exceptional value and low total cost of ownership.

Application Note: Real-time monitoring of fast chemical reactions with Spectrum 3 ▶

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RESEARCH AND ACADEMIA

Academic and research institutions worldwide that are working at the cutting edge of science and pioneering innovations need an advanced FT-IR system that adapts to their needs and delivers consistently high performance in a cost-effective way.

The Spectrum 3 FT-IR instrument balances versatility and total cost of ownership to deliver the cost-effective performance these organizations are looking for. It's simple to configure complex experimental setups and flexible enough for multiple research areas, and it enables researchers to characterize a wide range of samples and novel materials.

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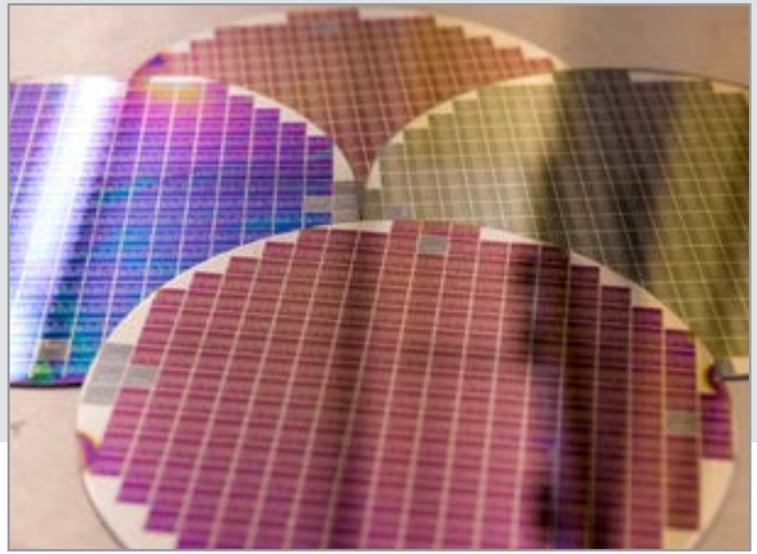
SEMICONDUCTORS

Fabrication managers in wafer design and manufacturing often contend with unreliable testing technologies and complex instrumentation that requires extensive training, which can lead to production interruptions and lack of confidence in results.

MappIR accessory with our Spectrum 3 system helps ensure quality, reduce fail rates, drive out impurities – and deliver production results. Whether you're working to improve product uniformity, reduce glass-forming temperatures in front-end fabrication, or evaluate and verify doping levels to maintain and optimize production processes, MappIR delivers fast, high-quality results you can trust via an easy-to-use interface.



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GREAT RESULTS ARE ALL WITHIN YOUR RANGE

Testing in all infrared ranges in one lab has always been an expensive, two-system proposition – and that's the very need that our triple-range Spectrum 3 system was designed to address. Now labs can perform analytical methods and method development across near-, mid-, and far-infrared ranges on a single system, efficiently and affordably.

The PerkinElmer Spectrum 3 offers superior spectral performance in the near, mid, and far infrared regions. Choose from a range of single and dual range configurations to meet your analysis needs. Automated setup and range switching allow you to quickly move to your next sample without manual reconfiguration, which increases your laboratory productivity and eliminates the need to purchase two instruments. And you're saving valuable bench space and reducing training requirements.

Extend your FT-IR capabilities with flexible, expandable performance to ensure you're ready for any sampling challenge.

Spectrum 3: The perfect system to extend your range – and expand your scientific opportunities.

See What's Inside

Watch On-Demand Webinar

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SETTING THE STANDARD

The Spectrum 3 FT-IR is loaded with a range of advanced innovations designed to provide optimal performance from the configuration you choose, day in, day out.

User-replaceable and electronically stabilized source
Unique electronic hot-spot stabilization increases measurement stability and extends source lifetime

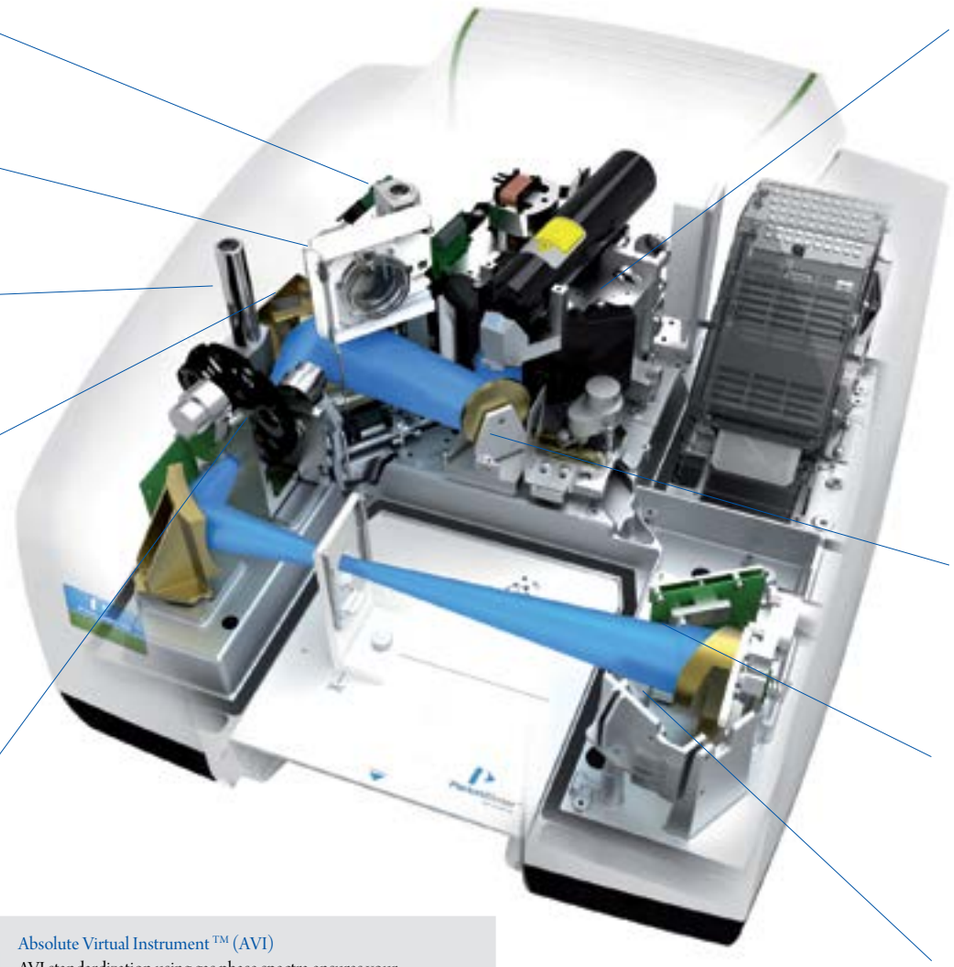
Beam-splitter changing mechanism
Automatic switching between the IR and NIR or FIR beam-splitter without manual user intervention

Microscopy and imaging upgrade capabilities
Installation of automated switching directs beam into any PerkinElmer microscopy or imaging system

Dual-source mechanism
Fast IR to NIR switchover at the touch of a button

Atmospheric Vapor Compensation™ (AVC)
AVC features an advanced digital filtering algorithm designed to compensate for CO_2 and H_2O absorptions in real time. AVC effectively eliminates interference from these atmospheric components, removing the need for instrument purging, allowing your laboratory to achieve more consistent results.

Variable J-stop
Limits beam divergence to provide optimal measurements at all resolutions, including intermediate settings, unlike fixed J-stops



Absolute Virtual Instrument ™ (AVI)
AVI standardization using gas phase spectra ensures your instruments are accurately calibrated. The instrument's wavenumber and line shape are standardized to a higher degree of accuracy than with conventional calibration methods. This unique standardization allows data to be transferred precisely between instruments, whether they are side-by-side or in remote locations.

Patented Dynascan™ interferometer
Inherently stable design does not require dynamic alignment correction to compensate for errors found in linear mirror movement systems. Field-proven interferometer mechanism incorporates a simple, noncritical bearing for unmatched longevity and reliability

Sigma-Delta conversion
Our use of Sigma-Delta converters in the digitization of the FT-IR interferogram improves dynamic range, reduces spectral artifacts, and increases ordinate linearity to produce accurate, reproducible results.

Output focusing optics for second sampling station
Enables two sampling accessories to be installed simultaneously, removing the need to switch modules between measurements

Temperature-stabilized DTGS detectors
All DTGS detectors are electronically controlled to ensure excellent reproducibility, regardless of ambient laboratory temperature

Second-detector configuration
Sensitivity can be increased by adding a second detector, such as a cooled MCT detector (not shown)

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PerkinElmer®
For the Better

ACCESSORIES MAKE THE THE SOLUTION

Whatever your sample, the Spectrum 3 FT-IR can be customized to address it. Its optical flexibility enables you to add a vast array of smart, zero-alignment accessories – and they can be quickly interchanged to create wholly new configurations, maximizing instrument uptime. Plus, an extensive range of third-party accessories are available to meet additional requirements.

Click on the numeral next to each accessory for detailed information.

11 Heatable Transmission Module [MIR, NIR]

12 EGA 4000

1 Solids autosampler [NIR]

This 30-position autosampler for tablets or powders has a patented custom mold for optimum reproducibility. And transmission and reflectance modes enable full tablet characterization.

2 Diffuse reflectance [IR/FIR]

With a range of sampling tools to aid sample preparation and automatic sample positioning for improved measurement sensitivity, this accessory delivers simple analysis of powders and difficult-to-measure solids.

3 Liquid sipper [NIR/IR]

This automated sampling accessory eliminates manual cell filling and uses built-in software contamination checking to reduce analysis error. It also offers a range of cell window materials and pathlengths.

4 HATR [IR]

The HATR accessory automatically recognizes top-plate crystal material, angle, and serial number and displays sample application force to ensure reproducibility. A wide range of optional top-plate materials and angles of incidence is available.

PerkinElmer® For the Better

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11 Heatable Transmission Module [MIR, NIR]

12 EGA 4000

13 MappIR

5 TG-IR interface [IR]

This accessory is perfect for hyphenated FT-IR-TGA applications that analyze breakdown products from decomposition and combustion. Its unique gas-transfer system ensures high sensitivity and minimum sample contamination.

6 NIRA [NIR/IR]

7

Measuring solids, liquids, powders, gels, and pastes within containers, such as blister packs, polythene bags, and glass vials, these accessories provide NIR reflection and transflection with no manual sample preparation. Their self-referencing (interleaved) functionality increases reproducibility and ease of use.

8 UATR [IR]

Ideal for universal sampling for simple IR spectroscopic analysis, this accessory automatically recognizes top-plate crystal, number of reflections, and serial number for traceability. Its unique kinematic top-plate mounting and electronic force gauge ensure optimum reproducibility. Plus, multiple replaceable sample top plates are available for ultimate flexibility.

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11 Heatable Transmission Module [MIR, NIR]

12 EGA 4000

13 MappIR

9 Remote liquids probe [NIR]

Remote transmission measurement of liquids allows direct measurement within reaction vessels. This accessory provides a universal interface that ensures compatibility with a wide range of probes and facilitates rapid and easy decontamination. What's more, it's electrically safe for use in hazardous environments.

10 Remote solids probe [NIR]

With the remote solids probe, you can sample powders or solids up to 10 meters away from instrument. Its advanced handset with scan trigger and LCD interface allows continuous remote operation and facilitates rapid and easy decontamination. And it's electrically safe for use in hazardous environments and is ATEX compliant.

ACCESSORIES MAKE THE THE SOLUTION

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◀ Back to additional accessories

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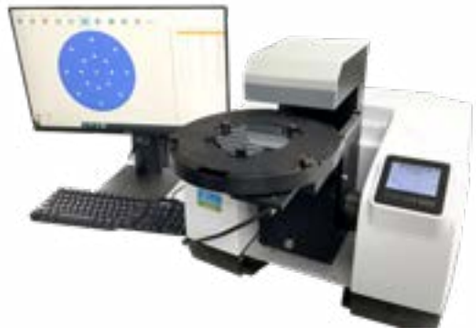

13

12

11 Heatable Transmission Module [MIR, NIR]

This module allows for easy elevated temperature measurements on samples in the mid-IR or near-IR regions.

12 EGA 4000

This integrated TG-IR evolved gas analysis system delivers full TGA performance inside a high-performance, research-grade FT-IR spectrometer.

13 MappIR

This technology is ideal for determination of contaminants and quantification of oxygen and carbon introduced during the manufacturing process.

PerkinElmer®
For the Better

BRINGING GREAT TECHNOLOGIES TOGETHER

Sometimes a single instrument or technique doesn't yield the depth of insight you need. So researchers turn to hyphenation, which allows you to acquire more valuable information from a single measurement. We provide a one-stop shop for all your hyphenation needs, greatly simplifying the experience and reducing the need for extensive training and support.

The EGA 4000 is the *world's first in-compartment TGA system*, bringing together a thermogravimetric analysis system and the Spectrum 3 FT-IR to deliver the simplest, most high-performance system available for evolved gas analysis (EGA).

With no transfer lines and cold spots, it's a comprehensive system for simple, efficient operation and fast, accurate analysis. And you can control the system through Spectrum™ 10 Timebase, our integrated software platform. With our advanced EGA 4000 hyphenated system, you can reduce cost of ownership by combining two systems in one – while making better use of valuable bench space.

Keep Reading

Spectrum 3 with EGA 4000

Learn More About EGA 4000 System

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For the Better

YOUR SAMPLE IN THE SPOTLIGHT

The same interferometer platform used in every Spectrum 3 instrument also powers Spotlight™ imaging and microscopy technologies. They are designed to meet the your research needs in many areas, including pharmaceutical, environmental, chemical, material, and academic research.

Upgrade your spectrometer at any time to include our industry-leading microscopy and imaging functionality, including Spotlight™ 150i, 200i, and 400 systems.

Our Spotlight series of high-performance FT-IR microscopy and FT-IR/NIR imaging systems reveal the identity of a vast array of chemical components within materials, as well as areas of homogeneity and variation.

The go-to materials-testing technique because of its speed, ease of use, and reliability, FT-IR/NIR imaging provides higher levels of understanding to facilitate your research. Spectrum 3 microscopy options include transmission and reflection microsampling, and its Micro ATR option delivers information down to areas as small as 3µ.

Spectrum 3 with Spotlight 400 FT-IR microscope

Learn more about Spotlight Microscope & Imaging Systems

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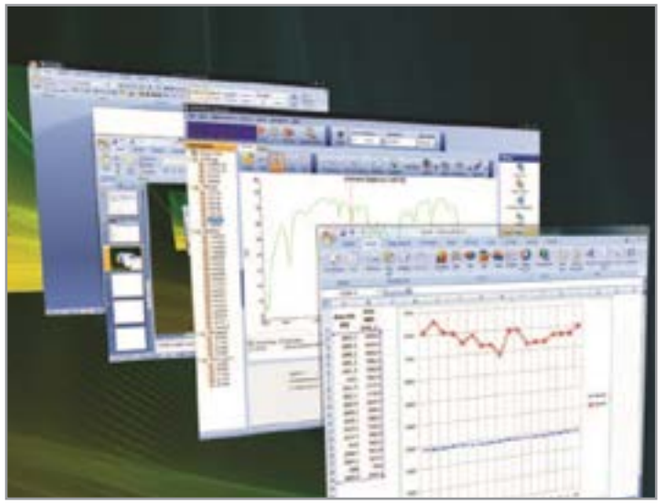
SOFTWARE THAT'S ALL ABOUT RESULTS



Great scientific instrumentation is only as powerful as the software that runs it. Maximizing productivity requires achieving the best results and insights through a simple, intuitive, straightforward experience. From sample identification to method development to results processing and reporting, the right software allows you to see and do more through seamless integration.

Spectrum 10™ instrument control and data management software is 21 CFR Part 11 compliant and allows you to easily acquire and process data in real time. AssureID™ technology, the industry-leading workflow acquisition and analysis interface, provides the most powerful solution for method development, product screening, and qualification. And the integrated SmartPanel display allows you to quickly see information on the instrument and easily run routine protocols.

With Spectrum 10 software, you can:

Do More in Less Time

With simple, powerful kinetics software, get faster data processing from complex data sets, as well as greater productivity with integrated TG hyphenation control and real-time monitoring.

Perform Better, Deeper Searches

Accurate results with an enhanced ATR algorithm that lets you search ATR spectra against more databases than ever.

Interact Easily

Collaborate via SmartPanel or PC with standard operating protocols and diagnostics – with better productivity for multiple runs in busy labs.

Read More

PerkinElmer® *For the Better*

COLLABORATE FROM THE CLOUD

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PerkinElmer NetPlus™

In a rapidly advancing, globally interconnected world, your business is dependent on your workforce's ability to connect, securely share, and collaborate in real-time.

Spectrum 10 software with NetPlus™ cloud connectivity offers new sharing and collaborative tools that allow you to access data from any device, any time, from anywhere, and selectively distribute and download data and methods through the built-in publishing tool.

- Securely share data, calibrations, methods, and reports
- Collaborate by accessing IR data from any device, whenever and wherever it's needed
- Improved support and uptime through seamless access to remote instrument health data on the network

Explore NetPlus for IR

PerkinElmer® *For the Better*

TRUST THE CONSUMABLES ENGINEERED FOR YOUR INSTRUMENTS

Today's increasingly diverse advanced materials laboratories are facing new challenges every day, testing everything from raw materials to finished products. Our comprehensive portfolio of consumables for analytical solutions are designed to give you the higher accuracy, sensitivity, and ease of use your laboratory demands for examining the purity, composition, and performance of your compounds.

When you order our precision designed, genuine PerkinElmer consumables, you can enjoy peace of mind, ease of ordering, and best-in-class service. You'll get the results you need – accurately and on time. We select only the highest quality products for our consumables portfolio and invest heavily to test and validate their quality.

Plus, we offer a variety of kits – from FT-IR maintenance to sampling, starter, and educational kits – designed to familiarize your novice users with the tools and best practices of FT-IR analysis. We also offer replacement parts, such as laser heads and source lamps, for the Spectrum family of instruments. These items are readily available, and most do not require installation by a PerkinElmer service engineer.

Explore our infrared consumables here

Order consumables quickly and easily by registering here

PerkinElmer®
For the Better

COMPLETE SERVICES FOR INCREASED PRODUCTIVITY AND EFFICIENCY

OneSource® Laboratory Services

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 spent 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.

PerkinElmer® *For the Better*

For more information on our Spectrum 3 FT-IR, visit www.perkinelmer.com/spectrum3

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For a complete listing of our global offices, visit www.perkinelmer.com/ContactUs

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