

thermoscientific

Materials Analysis Solutions from R&D to Production



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Techniques and Tools at a Glance

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What do you need to do today?

Whether you're **discovering** new materials, **solving** analytical problems or **assuring** product quality, your materials analysis instruments need to deliver the definitive answers you're looking for — fast!

Finish your PhD, publish groundbreaking discoveries, write a winning grant proposal, or patent novel materials with data from tools that give you the most information in the shortest amount of time.

Take your ideas to market quickly and keep your company competitive by standardizing materials analysis instruments and software across your organization — from the research department to the factory floor and in the analytical services lab.

We help you to:

- **Discover** new materials with reproducible data from complementary techniques that allow a better understanding of your sample
- **Solve** materials and methods development challenges to improve processes and investigate product defects
- **Assure** defects are rejected before they reach your customers and jeopardize your reputation

Minimize the learning curve for instrument operation and data interpretation with consistent technology and software needed to make critical decisions and limit risks. Whether you partner with academia for new materials or transfer methods from your analytical department to quality assurance labs across the globe, reliable data is key to your success.

Streamline your ideas to market with Thermo Scientific™ solutions for

discover solve assure

Nicolet iS50 FTIR Spectrometer

Complete spectroscopy workstation for advanced chemical analysis

Solve analytical challenges at the push of a button using the Thermo Scientific™ Nicolet™ iS50 FTIR Spectrometer. Built with an integrated ATR for quick sampling, and with a dedicated sampling compartment, this workstation gives you answers that keep pace with your ever-changing workload. Identify unknown chemical components, troubleshoot production problems, or investigate dynamic time-based processes with award-winning Thermo Scientific™ OMNIC™ Software.

Manage complex workloads and plan for future demands with:

One-button automated set-up: go from near-IR to far-IR with our Automated Beamsplitter Exchanger (ABX), avoiding delays and problems of manual optics exchange

Built-in diamond ATR: ideal for quick walk-up sampling while keeping your spectrometer available for dedicated accessories

Expanded spectroscopy capabilities: add modules and accessories for Raman, Near-Infrared (NIR), Thermogravimetric analysis-infrared (TGA); attach the spectrometer to an IR microscope or gas chromatography system for the ultimate materials analysis workstation

For advanced spectroscopy, the Nicolet iS50R FTIR spectrometer model adds step-scan and dual-channel capabilities. Perform time-resolved spectroscopy, PM-IRRAS, VCD and other advanced experiments to accelerate your research.



Nicolet
iS50 FTIR
Spectrometer

Nicolet iS5 FTIR Spectrometer

Small, rugged, and lightweight for any QA/QC environment

No need to compromise on performance, fit and affordability on this portable FTIR spectrometer for quick material identification. Expand your sampling capabilities with a diamond ATR accessory for fast, bulk sample analysis.



Nicolet iS10 FTIR Spectrometer

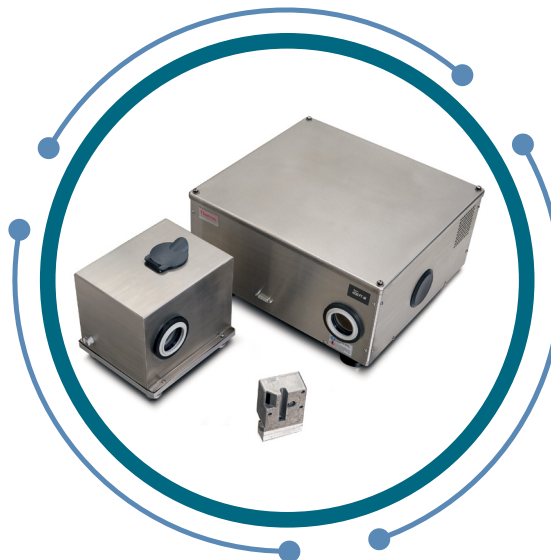
Precise sample verification in minutes

Conduct routine chemical identification with a complete infrared spectrometer built for high-throughput performance across users of all skill levels. Quickly identify mixtures with innovative multi-component analysis. Stay compliant with our tools and software for IQ/OQ and 21CFR11 regulations.

Nicolet iG50 FTIR Spectrometer

Modular system for custom solutions

Acquire the power and sensitivity of a research FTIR system with the robustness of an industrial analyzer. This rugged, user-configurable FTIR platform allows you to easily integrate infrared analysis into your process monitoring systems. The compact and rack mountable design is ideal for OEM integration.



Nicolet iN10 MX FTIR Imaging Microscope

Breathtaking chemical images at blazing speeds

Novices and microscopy wizards alike can confidently turn visual and chemical information into answers with the Thermo Scientific™ Nicolet™ iN10 MX FTIR Imaging Microscope. From single-point measurements to ultra-fast imaging, this integrated microscope analyzes samples down to 10 microns. Ideally suited for forensic evidence, failure analysis, chemical distributions, counterfeit testing, and analysis of laminates and coatings.



Easy data interpretation: powerful Thermo Scientific™ OMNIC™ Picta™ Software guides users through data acquisition and multicomponent analysis for rapid identification

Real-time, ultra-fast mapping saves time: view spectral results as you scan the sample with lightning fast stage movement and spectral analysis software (150 spectra/second)

Three-detector versatility: configure the microscope with single or multiple detectors; a room temperature detector for measurements without liquid nitrogen, an MCT detector for high-spatial resolution and an array detector for rapid imaging

Nicolet
iN10 MX FTIR
Imaging
Microscope



Nicolet iN10 Infrared Microscope

Automated FTIR microspectroscopy for busy labs

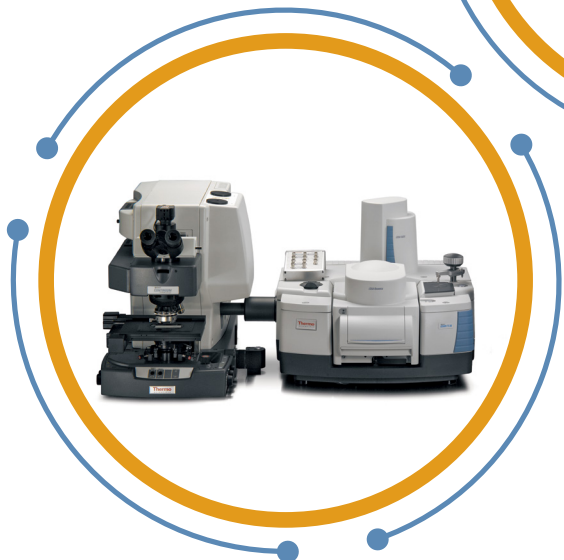
Confidently perform microspectroscopic analyses without an external spectrometer using an intuitive, FTIR microscope that collects sample IR spectra down to 10 microns. Identify mixtures and pure compounds fast with integrated OMNIC Spectra software.



Nicolet iN5 FTIR Microscope

Rapid sample identification with point-and-shoot simplicity

For the busy QA/QC lab, this FTIR microscope coupled with a Nicolet FTIR spectrometer quickly locates contaminants, and identifies inclusions and particles. A simple-to-use design and multiple IR collection modes allow users to make fast decisions with confidence.



Nicolet Continuum Infrared Microscope

Advanced light and FTIR microscopy for complete analysis

Our research-grade microscope takes infrared sampling to the next level when combined with the Nicolet iS50 spectrometer. Transmission, reflectance, and micro ATR sampling provides flexibility for your multi-user lab. Enhance your research with optical and polarization techniques (e.g., DIC) that other FTIR microscopes are unable to show.

Antaris MX FT-NIR Analyzer

Real-time monitoring improves process yields

Optimize product quality while remotely monitoring your process at multiple points using the Thermo Scientific™ Antaris™ MX FT-NIR Analyzer. This plant-ready near-infrared spectrometer uses fiber optic probes for real-time feedback of critical processing parameters. Perform point-of-use materials analysis or monitor online production for process analytical technology (PAT) compliance.

Lower operating costs: simultaneous, multi-point analysis with NIR probes monitor materials at critical measurement points in your process and enable you to quickly change parameters to optimize yields

Reliable, reproducible data: the Thermo Scientific™ ParaLux™ Sample and Reference System provides internal qualification with traceable standard reference materials

Simplify methods development: design routine or automated measurement methods using Thermo Scientific™ RESULT Software workflows for calibration transfer

Antaris MX FT-NIR Analyzer



Nicolet iS5N FT-NIR Spectrometer

The economical, rugged near-infrared spectrometer

Minimize the complexity of your QA/QC lab with our compact near-infrared spectrometer. Reduce cost of ownership with this affordable spectrometer that confirms sample identity even through packaging materials using our powerful OMNIC software suite.



Antaris II FT-NIR Analyzer

Flexible sampling methods, robust answers

Easily develop and transfer methods from lab to the plant floor with our durable NIR analyzer that collects reliable data at-line, online and in-line with your process. Customize specific applications or choose a sampling system that includes transmission, fiber-optic and integrating sphere diffuse reflection analysis, all in one turnkey system.

Antaris iGS Gas Analyzer

Real-time analysis of complex gas mixtures

Simultaneously analyze more than 100 gas species using this rugged, mid-infrared gas analyzer in any plant or process environment. Industrial rack mounts, flexible gas cell configurations, factory-supplied calibrations, and on-site training services make this the ideal system to obtain research-grade results with speed and sensitivity.



DXR2xi Raman Imaging Microscope

Characterize new materials with fast chemical imaging

Quickly explore areas of interest with large-area, fast mapping using the Thermo Scientific™ DXR™2xi Raman Imaging Microscope to collect visual, spatial, chemical and morphological data. Accelerate your research with this fully automated imaging microscope and our powerful Thermo Scientific™ OMNIC™xi Software. Exchange lasers, filters, and gratings in seconds. Novice or expert can accurately map materials to locate contaminants, study heterogeneous features, and conduct depth analysis of samples in real time.

Focus on your work rather than learning a new tool when you:

Save time with intuitive operation:

regardless of user skill level anyone can quickly generate reliable chemical images with confidence

Quickly optimize imaging parameters in real-time:

visualize your data and then adjust images on-screen to compare and contrast areas of interest across your sample

Ensure accurate measurements:

autoalignment and calibration require no tools while background compensation is automatic



DXR2xi
Raman
Imaging
Microscope



DXR2 Raman Microscope

Identify unknowns with point-and-shoot simplicity

Solve your most challenging problems with a Raman microscope any technician can walk up and use. Quickly find and analyze unknown particulates and contaminants below 1 μm in size with comprehensive OMNIC software.



DXR2 SmartRaman Spectrometer

Accurate results without sample preparation

Measure samples directly through glass and plastic, automate batch testing, and rapidly test bulk materials. Ease and consistency of push-button operation are ideal for multi-user QA/QC labs.



iXR Raman Spectrometer

Add a Raman spectrometer to create hyphenated techniques

Simultaneously collect Raman spectral data when you attach this spectrometer to other analytical instruments, and obtain a more complete understanding of your new material. By connecting the spectrometer to a rheometer, you can collect additional mechanical, thermal, and physical information with a single sample.

HAAKE Viscotester iQ Rheometer

Move from simple to complex rheological testing - fast

Measure mechanical properties of liquids, pastes, or semi-solid samples with ease using this compact, portable, line of rheometers. With Connect Assist technology, accessories are automatically recognized for fast, effortless setup between materials and measurements.



HAAKE MARS Rheometer

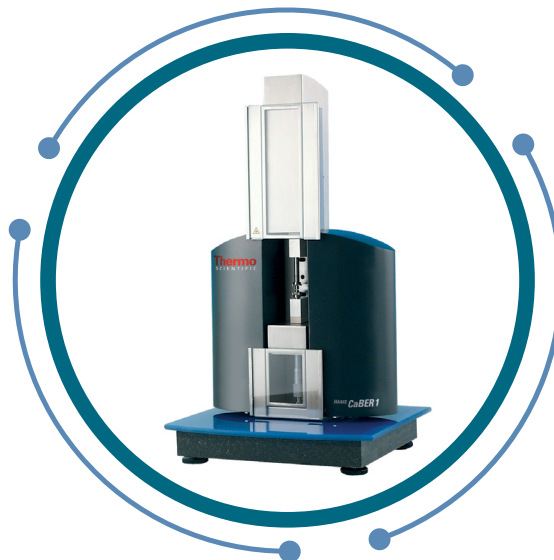
Modular platform for comprehensive material characterization

Characterize your materials with this highly flexible Modular Advanced Rheometer System (MARS) designed to provide accurate results, easy handling and application-specific solutions. Couple this rheometer platform with other analytical techniques (e.g., FTIR, Raman spectroscopy) or optical microscopy to extend your measuring capabilities.

HAAKE CaBER 1 Capillary Breakup Extensional Rheometer

Quantify elongational properties with ease

Evaluate the thinning and break-up of a fluid filament with the only commercially available extensional rheometer for low to medium viscous liquids. Obtain valuable information of mechanical properties (e.g., stringiness, extensional viscosity, elastic instabilities, and mouth feeling) that rotational rheometers simply cannot provide.



Pharma 11 Twin-Screw Extruder

Small, simple, scalable drug formulation

Conduct formulation and process development research with your API/excipient mixture using hot melt extrusion or continuous granulation that can be scaled up with less effort than batch processes. This extruder complies with cGMP, ISO and other pharma regulatory requirements.



Process 11 Parallel Twin-Screw Extruder

Minimize material use during material development

Optimize compounding recipes for food, polymer, and cosmetic formulations with a benchtop extruder that streamlines your process development from R&D to production.

Visit
thermofisher.com/compounding
 to learn more.

HAAKE PolyLab OS Modular Torque Rheometer

Minimize time to model your process and scale-up

Monitor important process parameters like melting behavior, influence of additives, temperature stability, shear stability, and melt viscosity with an innovative torque-rheometer platform that is focused on optimizing process development and scale-up. Choose from a range of extruder and mixer options to design your application.



NanoDrop One Microvolume UV-Vis Spectrophotometer

Quantify and qualify samples for downstream success

Rely on fast, accurate quantification of DNA, RNA and protein samples using only 1–2 μL with the Thermo Scientific™ NanoDrop™ One Microvolume UV-Vis Spectrophotometer. No dilutions needed even for highly concentrated samples with pioneering sample-retention technology* using optical measurement pedestals and pre-programmed methods. For over 15 years and with over 40,000 citations, NanoDrop technology is still trusted by research scientists worldwide.

NanoDrop One technology is as simple as “pipette, measure, know” with:

Contaminant identification: see absorbance curves from common contaminants and automatically obtain corrected concentrations with Thermo Scientific™ Acclaro™ Sample Intelligence technology

Guided troubleshooting: be alerted when purity ratios are out of range and follow suggestions on the touchscreen interface

Modern connectivity: achieve seamless data transfer to PC or network via Wi-Fi, USB, or Ethernet. Export your data to Thermo Fisher Connect and access your data anytime, anywhere from any device from the Thermo Fisher Cloud



NanoDrop
One UV-Vis

*US Patents 6628382 and 6809826

GENESYS 30 Visible Spectrophotometer

UV-Vis data analysis for advanced courses

Facilitate student learning by integrating an innovative, visible spectrometer into your higher education curriculum that is designed to let students focus on collecting and understanding scientific data rather than learning how to use the instrument.



GENESYS 180 UV-Vis Spectrophotometer

High-throughput for heavy workloads

Experience the power of double beam UV-Vis reliability with this next generation spectrophotometer. Room-light resistant measurements are possible with the 8-position cell changer included for multi-sample processing. No PC required with a 7-inch touchscreen display that controls data collection and optional Peltier thermostatted temperature control accessory.



Evolution 220 UV-Vis Spectrophotometer

Wide range of accessories handles any sample need

Run challenging samples and set up sophisticated experiments with this flexible spectrophotometer. Take your routine measurements or your research study to the next level with customizable workflows, temperature control, rapid-mixing for kinetics, and 21 CFR Part 11 compliance.



Quattro Environmental Scanning Electron Microscope (ESEM)

Versatile SEM with unique environmental capability

Study your samples in their natural state with this versatile electron microscope that combines high performance imaging and analytics with a unique environmental mode (ESEM) for the most accurate information about structure and composition of your material. Achieve excellent resolution with the Quattro field emission gun (FEG) on the widest range of samples and gain more insight into your material with a choice of detectors that includes directional backscatter information, STEM and cathodoluminescence.

Easy-to-use: ideal for multi-user labs (academia, industry, government) with different experience levels and disciplines on a platform that supports unique *in situ* experiments

Widest sample range: the field emission gun (FEG) ensures optimal resolution, while a choice of three vacuum modes accommodates the widest range of samples, including outgassing and vacuum-incompatible samples

High-performance versatility: enhance capabilities with energy dispersive X-ray spectroscopy (EDS), electron backscatter diffraction (EBSD) and wavelength dispersive X-ray spectroscopy (WDS). High Vacuum Heating Stage, AutoScript tool, and a new RGB cathodoluminescence detector are optional.

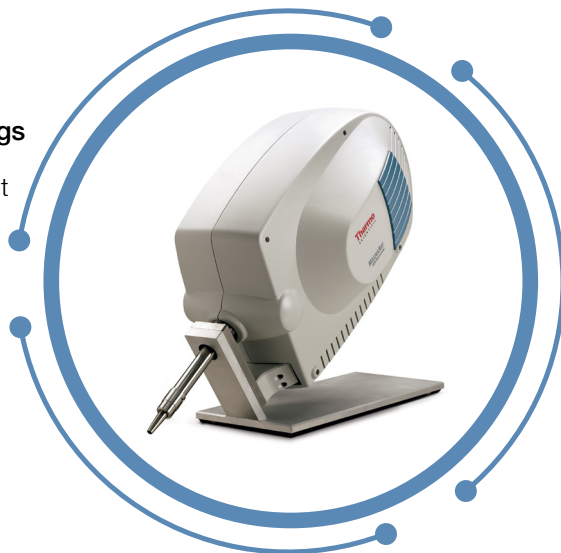


Quattro
Scanning
Electron
Microscope

WDS MagnaRay Spectrometer

Reproducible results with automated alignment and settings

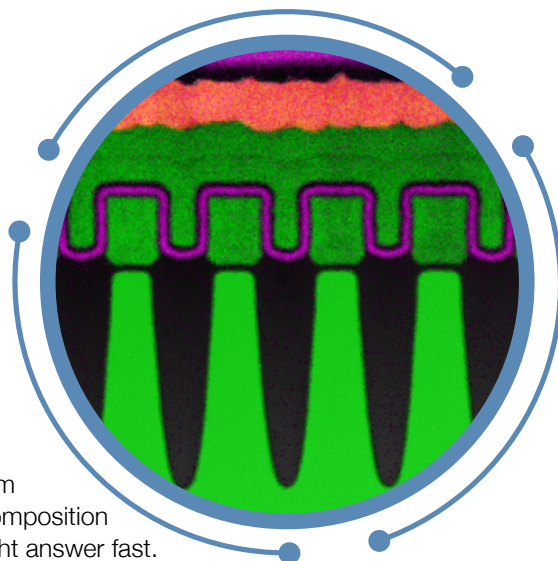
Achieve high-sensitivity elemental analysis under low-beam current and low-voltage conditions on your electron microscope with our Wavelength dispersive X-ray spectrometer. Expect speed and precision from a built-in expert system that automatically determines the elements and complements EDS analysis at extreme X-ray collection rates.



UltraDry Energy Dispersive Spectroscopy (EDS) Detector

Elemental identification with speed and ease

Collect EDS X-ray energies in electron microscopy with unmatched spectral resolution at high X-ray collection rates. Ideal for the metals and mining, advanced materials and semiconductors industries.



Pathfinder X-ray Microanalysis Software

Elemental answers in stunning visual detail

Enhance electron microscope imagery with microanalysis software that shows phase-based, chemical composition of your sample from our EDS detector. Analyze elemental spectral data to identify the composition of nanoscale structures and phase changes, so that you get the right answer fast.

ARL PERFORM'X Sequential X-Ray Fluorescence (XRF) Spectrometer

High-sensitivity XRF analysis down to the ppm level


Integrate bulk elemental analysis with surface mapping and small spot analysis to create a solution that evaluates up to 90 elements in nearly any solid or liquid sample without destroying your sample. No standards are required when using Thermo Scientific™ UniQuant Software for identifying totally unknown samples.

Perform advanced material characterization with the Thermo Scientific™ ARL™ PERFORM'X Sequential X-Ray Fluorescence Spectrometer that meets your desired precision and limits of detection.

Wide elemental and concentration range: Ultra Closely Coupled Optics (UCCO) offers the highest performance from boron to uranium with a wide dynamic range (from sub ppm to 100%)

Intelligent sample handling: liquid sample recognition and leak prevention design allows sample changer to automatically process different samples in mixed batches

Fast analysis cycle times: with the fastest goniometer in the industry, high-throughput labs can process up to 60 samples per hour, unmanned



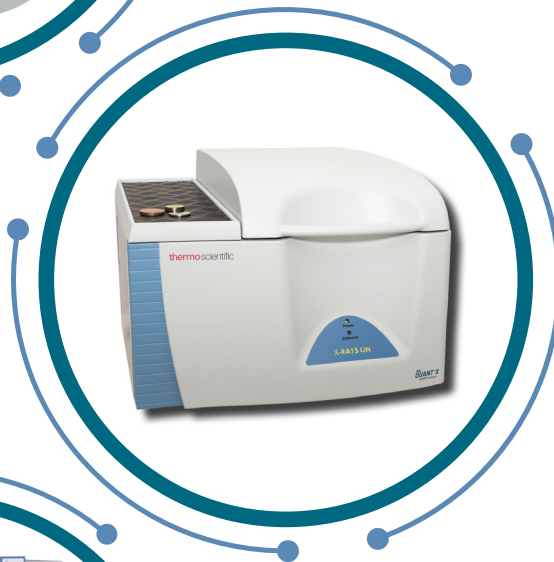
ARL PERFORM'X
Sequential X-Ray
Fluorescence (XRF)
Spectrometer



ARL iSpark Optical Emission Spectrometer (OES)

Sensitivity and ultra-fast analysis in one elemental analyzer

Adapted to work in harsh environments, this OES system provides reliable metals analysis to foundries, automotive and aviation fabricators, appliance industries, contract laboratories and metal recyclers. Quantify, identify and determine size distribution of micro-inclusions in metallurgic samples in record time.



ARL QUANT'X EDXRF Spectrometer

Major, minor and trace element quantification across the broadest range of samples

Analyze bulk solids, granules, powders, thin films and liquids in minutes with an EDXRF spectrometer. Built with the latest generation silicon drift detector (SDD) and Advanced Digital Pulse Processing (DPP) technology, central and contract laboratories as well as other industries can expect exceptional sensitivity for trace analysis and high measurement throughput for process control.



ARL EQUINOX X-ray Diffractometer

Broad XRD portfolio from bench top to advanced platforms

Perform qualitative, quantitative and advanced structural investigations of routine QA/QC phase quantification in industrial process control. Assess structures, texture, residual stress, polymorphism, reactivity and kinetics of advanced materials (powders, solids, thin films) in real time.

Nexsa X-Ray Photoelectron Spectrometer (XPS) System

Affordable, fully-automated, multi-technique XPS

Acquire high-throughput data with research-quality results using the Thermo Scientific™ Nexsa™ X-Ray Photoelectron Spectrometer (XPS) System for microelectronics, ultrathin-films and other nanotechnology applications.

Advance your research goals with true correlative analysis using this cost effective, X-ray photoelectron spectrometer that allows you to combine complementary techniques, such as Raman spectroscopy, to improve your understanding of sample surfaces.

Powerful correlative data analysis:

the Nexsa design allows multiple techniques (i.e, Raman, REELS, UPS, ISS) to be integrated into your XPS analysis so you gain enhanced insight into material properties and composition

Effortless features location:

quickly find features of interest using the unique optical system and SnapMap, the rapid XPS imaging method

Fast, accurate depth profiling:

use the EX06 monatomic ion source or MAGCIS dual mode ion source to remove layers and conduct depth analysis of your advanced materials

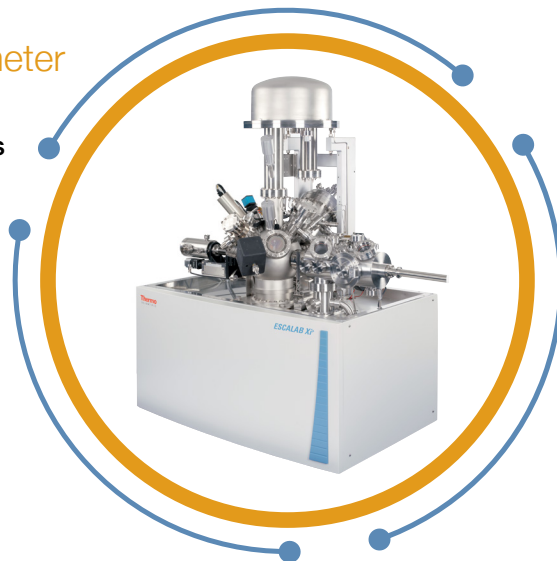


Nexsa X-Ray
Photoelectron
Spectrometer
(XPS) System

ESCALAB Xi⁺ X-ray Photoelectron Spectrometer (XPS) Microprobe

Quantitative imaging and multi-technique surface analysis

Combine high-sensitivity and flexible XPS with the Thermo Scientific™ Avantage™ Data System, and you have a powerful surface chemistry analysis tool for advanced materials research. Perform depth profiling, automated analysis and small-area XPS with this leading-edge XPS microprobe.



K-Alpha XPS System

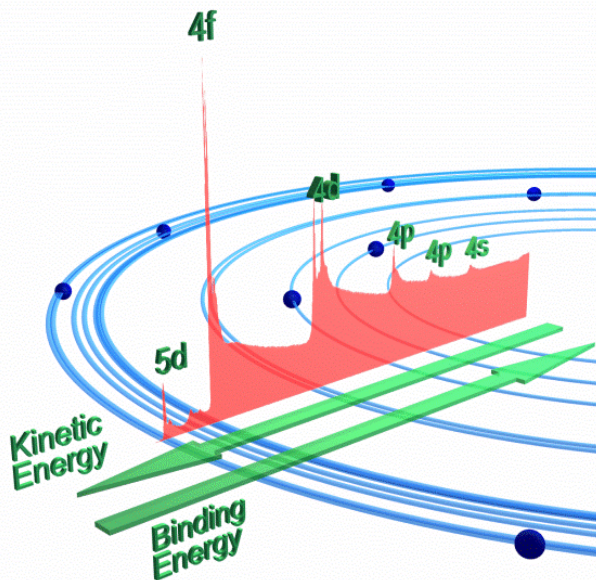
Fast, accessible surface and thin film characterization

Conduct both research and routine analysis with a fully integrated, monochromated, small-spot X-ray photoelectron spectrometer system with depth profiling capabilities. The high-efficiency electron lens, hemispherical analyzer and multi-channel detector provide high signal-to-noise performance and rapid data acquisition.

XPS-simplified.com

Access answers anytime, anywhere

Use this helpful online resource to learn the basics of XPS, download the latest XPS application notes, select the right instrument for your lab and more. Try our interactive periodic table to see detailed XPS information on each element that can help you interpret XPS spectra.



Helpful Materials Analysis Resources

Spectroscopy Academy

thermofisher.com/specacademy

Find videos, on-demand webinars, and articles at the Thermo Scientific™ Spectroscopy Academy, and discover how you can enhance your knowledge of FTIR, Raman, NIR, XPS and more.

Advancing Materials Blog

thermofisher.com/advancingmaterials

Stay current on advanced materials analysis topics discussed by our experts offering insights on your daily challenges.

Unity™ Lab Services

unitylabservices.com

Find instrument service and support as well as enterprise services for your laboratory. Simplify your services model, reduce costs and increase productivity with our robust, integrated services.

OES, XRD and XRF Resources

thermofisher.com/elemental

Understand the elemental composition of your materials with instruments and applications that meet the needs of analytical laboratories serving a diverse range of industries.

XPS Simplified

xpssimplified.com

Explore our interactive web site of elemental properties and XPS analysis, access videos and application notes, and compare instruments in this complete XPS resource.

Materials Science Resource Center

thermofisher.com/msrresources

Understand the structural, elemental, chemical, and physical properties of your material of interest, and peruse our library of more than 200 application notes and articles.

Material Verification QA/QC Resources

thermofisher.com/qcsolutions

See how to identify defects and contaminants that could negatively impact your final product in this complete resource library for quality assurance/quality control.

Molecular Spectroscopy Webinars

thermofisher.com/spectroscopywebinars

Join us for our one-hour-or-less webinars on a variety of molecular spectroscopy techniques and applications.

UV-Visible Spectrophotometry

thermofisher.com/uv-vis

View our extensive line of UV-Vis instruments for education, research and QC.

Electron Microscopy Resource

thermofisher.com/em

Find a range of high-performance microscopy tools and techniques that provide images and answers in the micro-, nano-, and picometer scales.

Drug Formulation Resources

thermofisher.com/drugformulation

See how to design and analyze hot melt extrusion and continuous granulation processes.

Tools for Education

Make learning memorable for young minds

As a professor you don't have to sacrifice performance in the teaching lab to provide a valuable hands-on experience for your students with these intuitive Thermo Scientific™ instruments. Bring the excitement of discovery into the classroom when you include our student-friendly hardware and software as part of your curriculum.

Nicolet iS5 FTIR Spectrometer

Entry level spectrometer stimulates curiosity

Teach the basics on how to identify molecules by interpreting the chemical functional groups on an FTIR spectrum. This compact, powerhouse of an FTIR spectrometer offers a range of accessories for all sample types (liquid, gas, solids) and comes with education experimental packages to help you develop an engaging curriculum.



picoSpin 45 Series II NMR Spectrometer

Affordable benchtop NMR spectroscopy

Share the power of NMR for identifying chemical compounds using only 30 μ L of sample to generate a spectrum. A highly stable, permanent magnet ensures easy, maintenance-free operation without the need for liquid cryogenics or NMR tubes. A variety of NMR lesson plans are available to help you save time.

GENESYS 50 UV-Vis Spectrophotometer

UV-Vis data analysis with Wi-Fi connectivity

Offered in a single-cell configuration, this instrument is designed with a sloping surface to shed spills along with a washable sample compartment for easy clean up. An intuitive, color touchscreen interface with local control software eliminates the need for a PC, making this a rugged tool for large teaching labs.



Chemistry in the Classroom

At Chemistry in the Classroom, our goal is to empower students and teachers through instrumentation and resources. Explore lesson plans, videos and products that complement your syllabus.

thermofisher.com/cic

3 Reasons to partner with us

Accelerate YOUR Innovation

Find the widest range of analytical methods to drive deeper insight into your materials. Then share your data anywhere, anytime and on any device with cloud-enabled instruments that connect to the Thermo Fisher Cloud.

Enhance YOUR Productivity

Do more in less time with user-friendly instruments and software that generate fast, expert answers. Robust hardware is designed to prevent downtime and enables easy owner maintenance. Use our multi-technique approach on instrument platforms to give you more answers per sample.

Build YOUR Confidence

Look to our dedicated **Unity™ Lab Services** to deliver expert installation, instrument training, and reliable service contracts. Keep your business running with unmatched support that includes a highly qualified dealer network, over 7,000 service engineers and 1,800 technical support personnel worldwide.

We are not a transient start-up company. We have been serving science for over 60 years. Our mission is to help you make the world a healthier, cleaner and safer place to live for all of us.



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*Unity Lab Services are available only in North America and Europe. Visit unitylabservices.com for details.

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