X-ray product range

For chemical and phase analysis of solids, liquids and powders

Metals, cement, mining, petrochemicals, environment, electronics, geology, glass, polymers, forensics, materials science, raw materials

thermo scientific

Basic X-ray fluorescence analysis

When space and resources are limited, or you are trying X-ray analysis for the first time, the Thermo Scientific™ Niton™ Handheld Analyzers are energy-dispersive and compact wavelength-dispersive X-ray fluorescence models that offer the easiest route into the exciting world of rapid non-destructive elemental analysis.

Portable EDXRF systems

Thermo Scientific™ Niton™ Portable XRF Analyzers—get lab-quality results in the field

- Large portfolio of handheld analyzers including the newest, Thermo Scientific™ Niton™ XL5 Plus handheld XRF analyzer, as well as the existing Thermo Scientific™ Niton™ XL3t handheld XRF analyzer, and Thermo Scientific™ Niton™ XL2 Plus handheld XRF analyzer
- Rapid, precise metal alloy identification, and verification
- Ideally suited for applications in various industries including positive material identification in energy, petrochemical and power generation; fabrication and QA/QC; and scrap metal recycling
- Verification of gold and other precious metals
- On-site elemental assay of soil, rock, ore for mining and exploration
- Identification of hazardous materials in consumer products, electronics, environmental samples, and toxic metals to ensure regulatory compliance
- Purpose-built for the most rugged environment, analyzers are easy to use and offer superior detection limits and exceptionally fast measurement times to ensure confident decision making

Benchtop EDXRF spectrometer

Thermo Scientific™ ARL™ QUANT'X Spectrometer—flexibility for the laboratory

- Analyze C to Am in samples of any shape, type, or composition
- A cost-effective all-round and stand-alone XRF solution
- Popular with laboratories responsible for research, forensics, environmental analysis, regulatory compliance, and quality control
- Large sample chamber for multi-point sample analysis and automated multi-sample handling in air, vacuum, and helium
- Sample imaging and adjustable beam size bridge the gap between bulk and micro XRF without compromise
- Advanced solid-state detector technology means easy installation, no special site requirements, and low cost of ownership
- Unrivaled precision in the standard-less analysis of any sample with the exclusive Thermo Scientific UniQuant Analysis Software

Sequential/simultaneous WDXRF spectrometer

Thermo Scientific™ ARL™ OPTIM'X Spectrometer—smart, optimized WDXRF

- Analyze O to Am in prepared solid, fused bead, powder, or liquid samples
- Wavelength dispersion offers high resolution and selectivity for consistent and reliable performance, regardless of matrix
- Best sensitivity in its class for F to Zn enables precise analysis of cement, slag, ceramics, feldspar, glass, ores, and minerals
- Ideal for routine applications in process control and general laboratories with a moderate sample throughput
- Low power consumption, integrated vacuum pump, minimal site requirements
- Excellent compact inorganic material analyzer, which reduces expenses, turn-around time and complements existing ICP capability

Advanced X-ray fluorescence analysis

For critical process control and laboratory applications, we offer high-power Thermo Scientific wavelength dispersive X-ray fluorescence and X-ray diffraction instruments that are unmatched in speed, precision and reliability. You can even combine both XRF and XRD in the same instrument for a comprehensive materials analysis from every angle.

Sequential WDXRF spectrometers

Thermo Scientific™ ARL™ PERFORM'X Spectrometer—where performance meets versatility

- Analyze Be to Am in solids, fused beads, powders, or liquids
- Wide dynamic range allows for concentration analysis from sub ppm to 100%
- 6th generation goniometer, fully digitally mastered, working at the highest speed with the best accuracy and precision
- Choice of generator power (1500 W, 2500 W, or 4200 W) depending on the analysis speed required
- Small spot capability down to 0.5 mm bridges the gap between bulk and micro investigation and allows analysis of small defects
- Advanced sample mapping feature for complete elemental visualization and quantification of non-homogenous surfaces, inclusion, and contamination research with 0.1 mm steps
- Scan based QuantAS semi-quantitative analysis for simple, push-button identification of any unknown sample
- Unrivaled precision in the standard-less analysis of any sample with the exclusive UniQuant Analysis Software
- Dedicated versions for various applications, notably in cement, slags, glass, refractories and ceramics, small spot and mapping analysis, petroleum, polymers and materials science.

Simultaneous WDXRF and integrated XRD system

Thermo Scientific™ ARL™ 9900 Series—complete X-ray analysis

- Analyze B to Am in solids, fused beads, or pressed powders
- Configurable for your applications with a choice of goniometers, monochromators, and compact XRD integrated system
- Unbeatable speed, precision, and light-element sensitivity with up to 32 dedicated fixed channels monochromators, including one detector for each element
- Obtain elemental and phase information in one report from the exclusive integrated XRF-XRD design
- Choice of generator power depending on the analysis speed required: 1500 W, 2500 W, and 4200 W
- Safe and reliable loading of samples with an X-ray tube above the sample
- Scan based QuantAS semi-quantitative analysis for simple, push-button identification of any unknown sample
- Unrivaled precision in the standard-less analysis of any sample with the exclusive UniQuant Analysis Software
- The only solution for critical process control applications when every second counts in metallurgy, mining, and cement industries
- More than one thousand ARL 9900 Spectrometers are installed worldwide and two hundred of these spectrometers are integrated into full laboratory automation systems

Powder X-ray diffraction

Thermo Scientific™ ARL™ EQUINOX 100 Diffractometer—Transportable benchtop X-ray diffractometer

- Compact bench top with micro source X-ray technology coupled with Smart Optics™
- Standard power supply and no external water cooling
- Lightweight and small footprint, easy to install, and basic maintenance-free operation
- < 200 W total power consumption
- Easy to use for everyone, and no alignment is needed
- Standard power supply and no external water cooling
- Large choice of X-ray anode (Cu, Co, or Mo)
- Real-time acquisition over 110° 2θ
- Ideal for QC/QA, phase identification, and quantification
- Measurements on powder, bulk and thin film—ambient or in temperature
- Enable transmission and reflection sample measurement for superior sample representativity
- Dedicated easy-to-use thin film attachment
- Ideal for QC/QA, phase identification, and quantification

Thermo Scientific™ ARL™ X'TRA Companion Diffractometer—Benchtop X-ray diffractometer for routine analysis

- Configuration: θ/θ Bragg-Brentano geometry
- Easy to use and to install in various environment
- Standard power supply with possibility of internal water cooling
- Cu or Co anode X-Ray tube
- Solid state pixel 2D detector (55 x 55 µm pitch) of last generation
- Fast and resolute data collection
- X-Ray beam collimation with various slits and variable beam knife
- Automated analysis with dedicated sample changer to your needs
- Measurements on powder and bulk in reflection mode
- Data processing with one-click Rietveld quantification capabilities
- Automated result transmission to a LIMS
- Ideal for routine control (QC/QA), phase identification and quantification

Thermo Scientific™ SolstiX™ XRD Software 21 CFR Part 11 ready

Thermo Scientific SolstiX XRD Software with Security Suite is available with ARL EQUINOX 100 X-ray benchtop diffractometer, enabling pharmaceutical companies to confidently achieve in a compliant environment while getting the performance results they need. Our software solutions satisfy 21 CFR Part 11 requirements for electronic signatures and complete audit trails.

- Protect stored electronic data related to quality assurance within manufacturer's computer systems
- Put controls in place to keep records authentic, incorruptible, and confidential
- Electronic signatures for the user to take responsibility for the electronic data in the system
- Requirements in the data record: date and time of the scan, name of the unique signer, and technological controls to ensure security (e.g., passwords)

X-ray automation systems

Analysis automation improves sample throughput, repeatability, and allows your operation to meet tighter product specifications and time pressure without increasing overhead costs. All automation solutions are customized to meet your specific requirements.

The family of ARL SMS automation products consists of:

- The ARL SMS-Omega XRF Instrument for the automation of the ARL OPTIM'X Entry-Level WDXRF Spectrometer
- The ARL SMS-PFX for the ARL PERFORM'X WDXRF Spectrometer
- The ARL SMS-XY manipulator-based system for XRF applications
- The ARL SMS-2300 robotized system for single OES or XRF spectrometer and sample preparation automation
- The ARL SMS-3300 Single robotized system for single OES or XRF spectrometer and sample preparation automation easily upgradeable into a double instrument system
- The ARL SMS-3300 Dual system for the automation of twin OES or XRF-OES spectrometers with single preparation machine support and standard cell layout
- The ARL SMS-3500 system for the automation of twin OES and/or XRF spectrometers with double preparation machine support and flexible cell layout

Thermo Scientific ARL OPTIM'X XRF with Thermo Scientific™ SMS-Omega

Thermo Scientific ARL PERFORM'X XRF with Thermo Scientific™ SMS-PFX

Thermo Scientific ARL 9900 XRF/XRD with Thermo Scientific™ SMS-XY

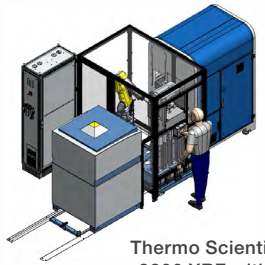
Simple automation for simultaneous and/or sequential XRF

- Circular Omega magazine or large XY magazine for sample handling
- Oxide and metals/oxide versions, fully unattended operation
- Control of sample preparation
- Built-in automated procedures for spectrometer performance verification and fine-tuning
- Easy introduction of manual samples via the instrument magazine

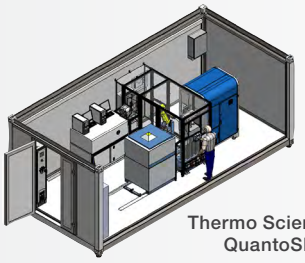
The Thermo Scientific™ ARL™ SMS-2300, SMS-3300, and SMS-3500 robotized systems

- Ultimate sample handling flexibility and speed with the automated Thermo Scientific ARL 9900 X-ray spectrometer with ARL SMS-2300 or SMS-3300 Single for one robot and one instrument.
- One robot, two instruments. The ARL SMS-3300 Dual and the ARL SMS-3500 can automate both an XRF and an OES spectrometer or two XRF spectrometers, including one or two sample preparation machines.

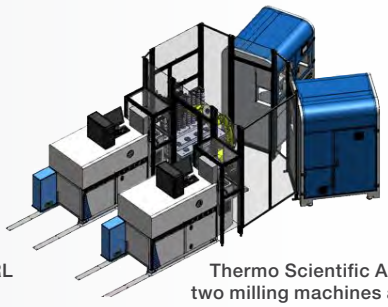
These systems can be supplied in a standard container for unattended on-site analyses: the Thermo Scientific™ ARL™ QuantoShelter, also called "the lab in a box."



Thermo Scientific ARL 9900 XRF with SMS-3300



Thermo Scientific ARL QuantoShelter



Thermo Scientific ARL SMS-3500 linking two milling machines and two spectrometers

What can X-rays do for you?

X-rays have been used to analyze and study materials since their discovery in 1895. Most people are familiar with applications of X-rays in imaging and medicine, but X-rays can also be used for chemical analysis. In fact, X-ray spectrometry is a proven, rapidly growing technique for qualitative and quantitative elemental analysis of many types of materials. The ability of X-rays to penetrate matter enables non-destructive, non-contact analysis of solid and liquid samples with minimal sample preparation, high repeatability, and little operator training.

X-rays are also used to study the crystallographic structure of materials. The discovery of X-ray diffraction (Bragg's Law) enabled physicists, chemists, material scientists, and metallurgists to study structure-property relationships leading to a multitude of new discoveries in materials science and technology.

Indeed, Thermo Fisher Scientific X-ray fluorescence and X-ray diffraction instruments are used in every field and industry, including mining and metals, construction, pharmaceuticals, consumer and food safety, environmental compliance, high-tech electronics, materials research, forensics, geology, archaeology, and even art preservation.

Have you thought about using X-rays to solve your materials analysis challenges?

Let the specialists at Thermo Fisher Scientific show you the way forward with the largest selection of innovative and reliable Thermo Scientific X-ray spectrometers for any budget and application. We can help you choose between the versatility of portable and benchtop EDXRF, the precision and speed of WDXRF, and the unique structural insight of XRD.

Learn more at **thermofisher.com/xrf** and **thermofisher.com/xrd**