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Thermo Scientific ARL X900 XRF Spectrometer

Reveal the value that lies within

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Preface

In the world of heavy industry, where precision and efficiency are paramount, elemental analysis plays a vital role. It enables you to analyze raw materials, monitor and adjust manufacturing processes and produce uniform products of desired specifications. But to achieve all this, you need an instrument you can rely on and measurements you can trust.

The Thermo Scientific™ ARL™ X900 XRF Spectrometer is the answer to your needs. Built on decades of experience and designed from the ground up for demanding industrial applications, it delivers reliable and precise elemental analysis results quickly. With the robust performance and unparalleled uptime of the ARL X900 Spectrometer combined with our comprehensive service support, you can trust that your production will never be compromised.

Introduction

With a track record of thousands of our WDXRF spectrometers operating in industrial settings, we know what it takes to build a trusted system. Designed to be operated in harsh environments like the metals, mining and cement industries, the ARL X900 XRF Spectrometer takes the proven concepts of its predecessors and enhances them for even greater performance.

Highlights

- Robust design with tube above and a single analysis chamber under vacuum ensures high instrument uptime.
- Large sample changer and dual-sample loader enable efficient sample throughput.
- Configuration options for combined simultaneous and sequential WDXRF bring unrivalled analytical flexibility and speed.
- Compact XRD for additional phase analysis capabilities provides two techniques in one instrument.
- Turn-key options tailor solutions to metals, cement and mining industries.

Experience the Thermo Scientific ARL X900 Spectrometer—the perfect match for your industry requirements.

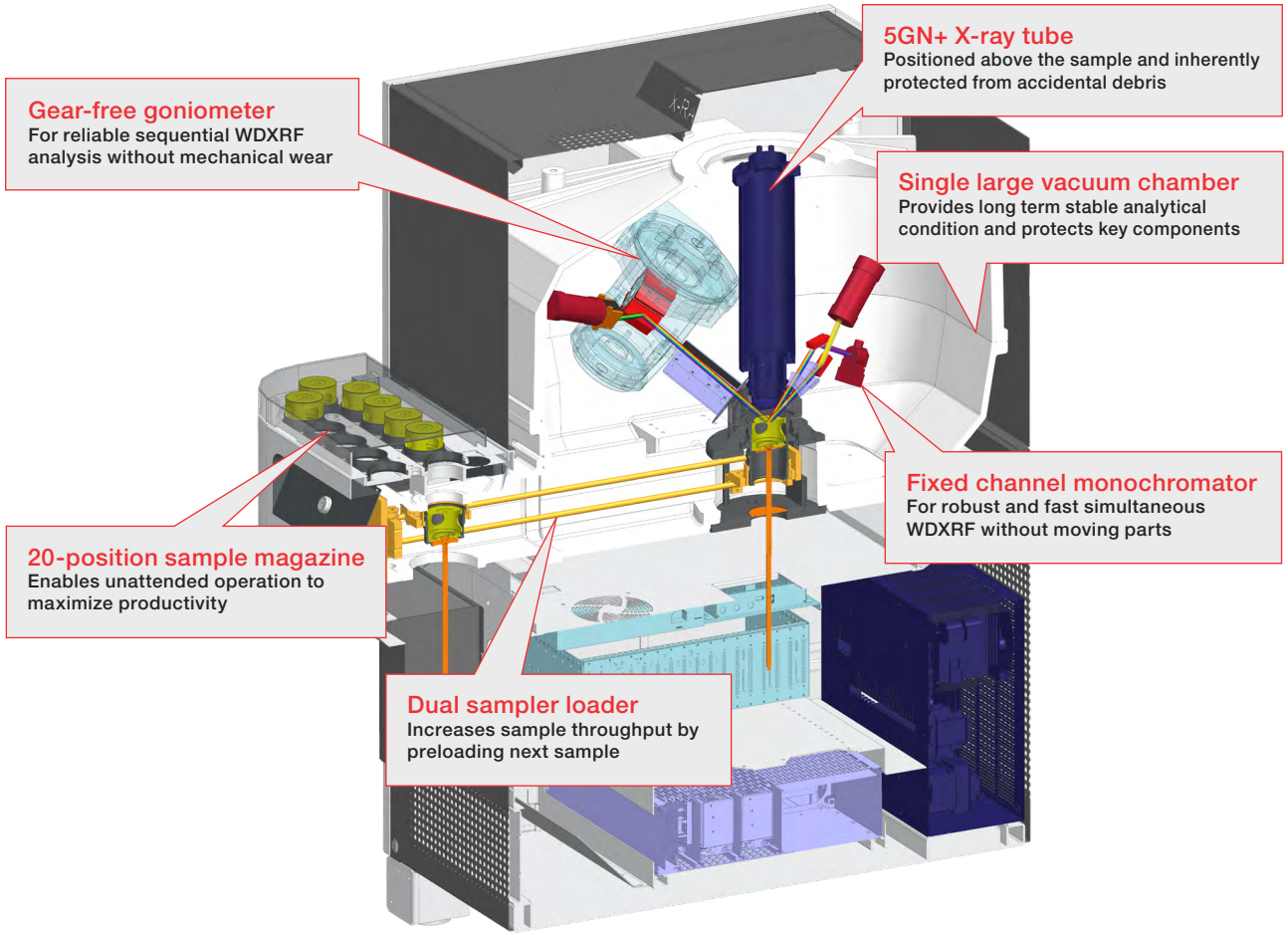
ARL X900 XRF Spectrometer.

Designed to keep you up and running

In production environments where process control, production, and quality assurance all rely on elemental analysis results, instrument reliability is non-negotiable. With the ARL X900 Spectrometer we continue our commitment to providing durable and robust analytical solutions for industry.

This is reflected in the instrument design:

- Inherently safe **tube-above geometry**: The X-ray tube is positioned above the sample, protected from debris and accidental sample breakage, ensuring highest uptime and reliability of the instrument.
- The **large vacuum chamber** protects the analytical core, X-ray tube and key electronics and maintains stable environmental conditions. As a result, there are fewer unplanned interventions, and prolonged analytical stability.
- Simultaneous XRF analysis with **fixed channel monochromators** does not require additional moving parts and also no P10 gas usage (for elements > Na).
- Our unique **gear-free goniometer design** for sequential XRF analysis eliminates wear, so that the goniometer maintains excellent angular reproducibility and precision throughout the entire lifetime.

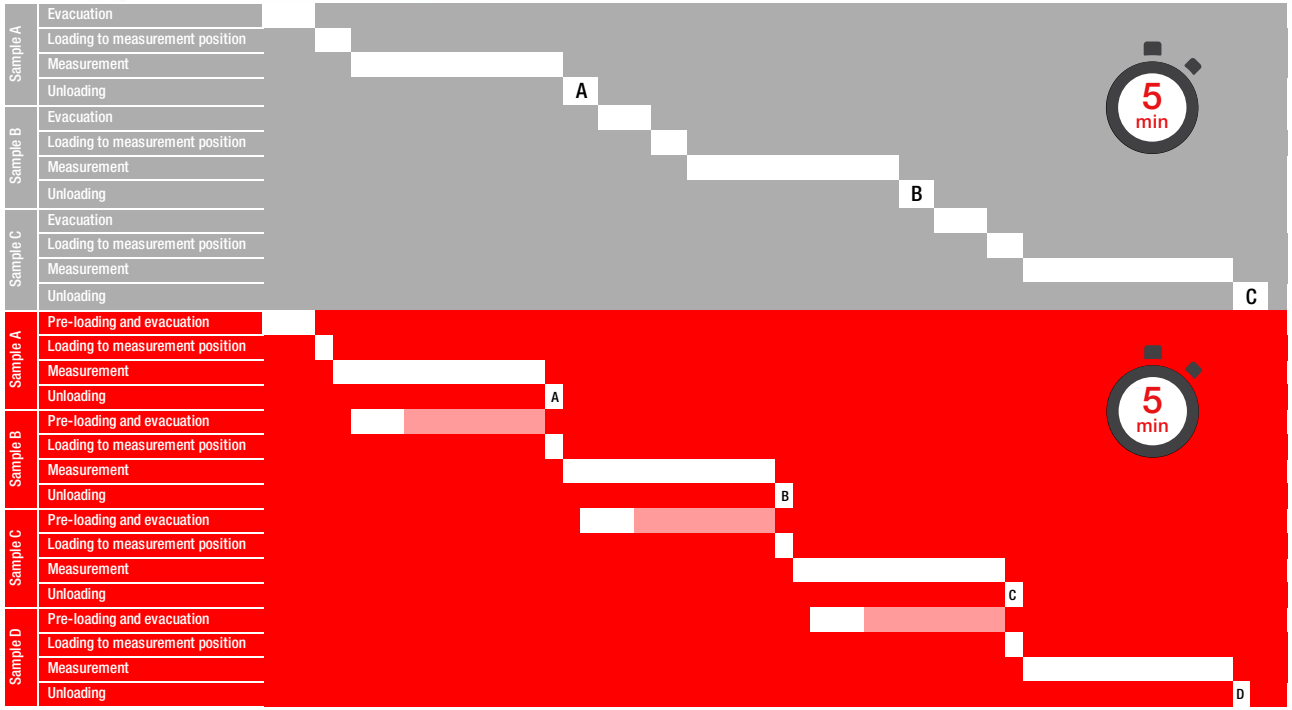


Cross-section of the ARL X900 Spectrometer, showing the instrument components that ensure high uptime and stable analytical results.

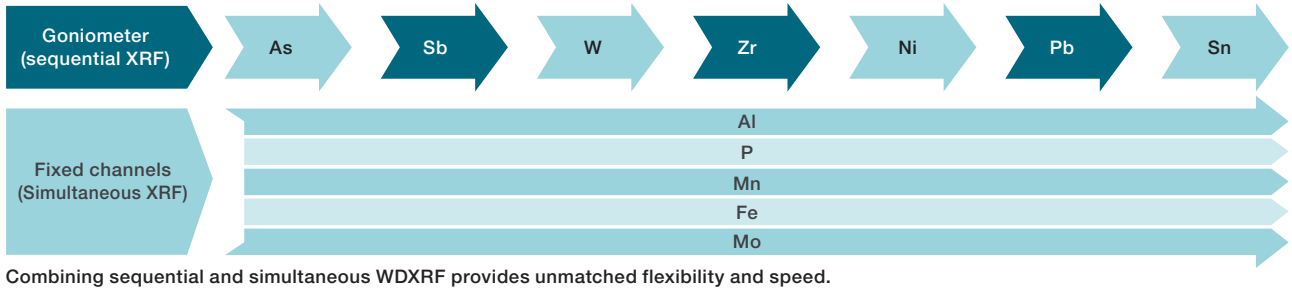
Accelerate time to results with higher speed and performance

With faster analysis, laboratories can process a higher number of samples within the same timeframe, boosting productivity. In addition, the same number of samples can be analyzed more in-depth, thus improving the accuracy of results. The ARL X900 Spectrometer combines several essential elements to achieve unparalleled efficiency:

- The **5GN+ X-ray tube** combined with high-power **generators** translate to higher X-ray intensity, resulting in faster measurements and lower detection limits.
- Up to two **5th generation gearless goniometers** provide fast sequential analysis and can also work in parallel with up to 20 fixed channel monochromators.
- Up to 32 **fixed channel monochromators** measure dedicated elements simultaneously, delivering fast, accurate results and lower limits of detection for demanding applications.
- The **Dual-sample loader** prepares the next sample in a batch while a measurement is running. This reduces deadtime between measurements and optimizes sample throughput.
- The **SCX fixed channels** deliver unprecedented accuracy of crucial matrix elements using an innovative detection system, further increasing analytical precision.



Sequencing of sample loading: single-sample loader (top, grey) vs. ARL X900 dual-sample loader (bottom, red). Time estimated for analyzing four metallic samples with 60-second measurements.

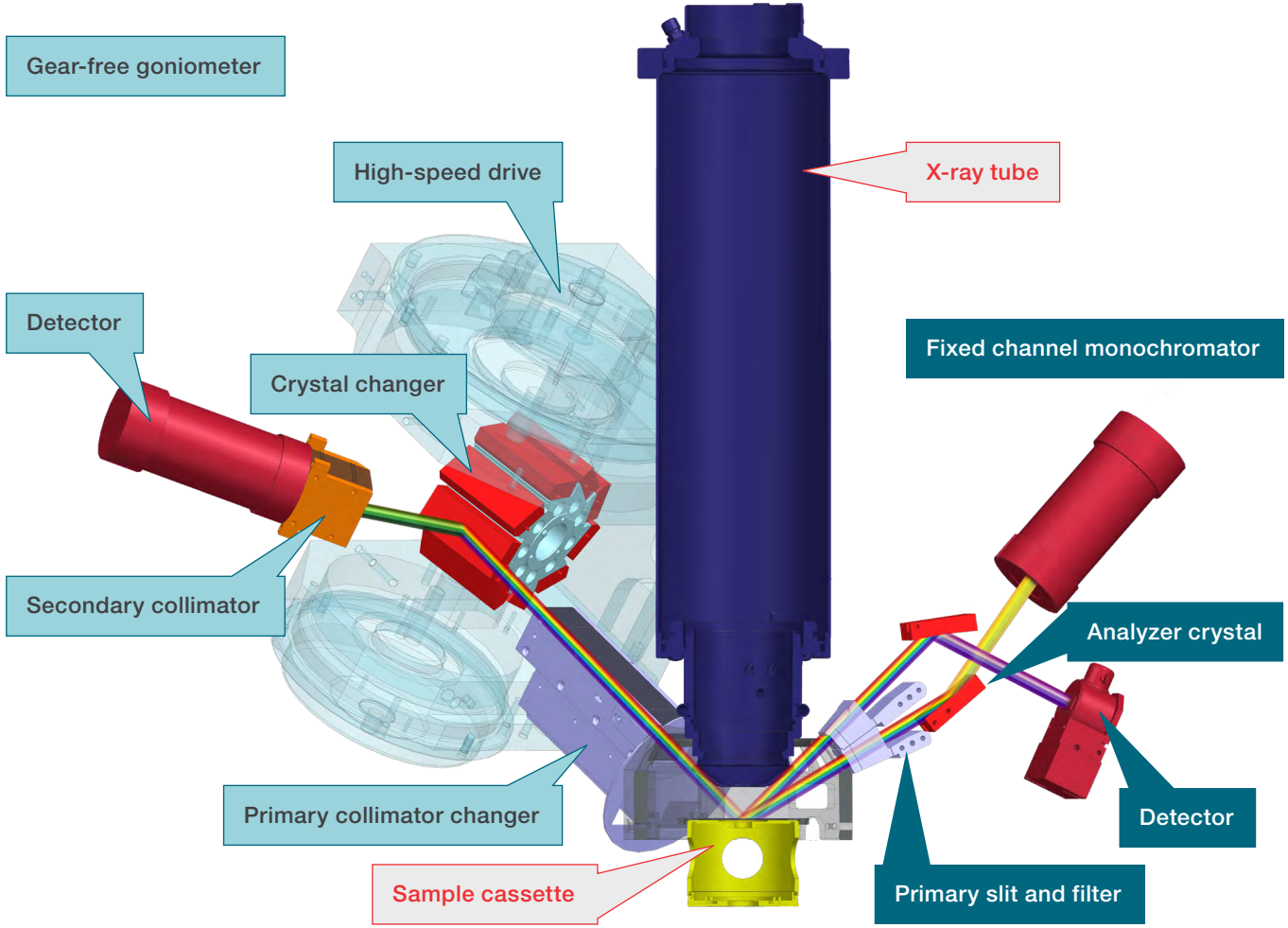


Combining sequential and simultaneous WDXRF provides unmatched flexibility and speed.

Customized solutions for precise analysis

Your manufacturing processes demand elemental analysis capabilities that align with your tightly controlled operations and high product quality. We understand the importance of a customized solution that delivers precise and reliable analytical performance tailored to your specific challenges. With the ability to configure the ARL X900 Spectrometer, we ensure that you have the right tools to meet your unique requirements and unlock the full value of your materials.

- **Maximum speed:** The ARL X900 Spectrometer features fixed channels for simultaneous XRF analysis, providing fast analysis, high sensitivity, and rapid processing to meet your demanding throughput requirements.
- **Flexibility in analysis:** Configured with a goniometer, the ARL X900 Spectrometer enables sequential XRF analysis of a series of elements, offering flexibility to cover a broad range of analytical needs and adapt to changing requirements.
- **Advanced analysis capabilities:** Combining two critical techniques in one instrument, the ARL X900 Spectrometer with compact XRD system, provides qualitative and quantitative analysis of crystalline phases, offering deeper insights into material composition and structure.



ARL X900 Spectrometer integrates fixed channels for simultaneous analysis and a goniometer for sequential WDXRF analysis, combining two essential techniques within a single instrument.

Tailored solutions for your analytical challenges

Our turnkey and standardless analysis solutions are designed to deliver reliable results. Pre-configured and calibrated by experts in our factory, these solutions are ready to use from day one.

Turn-key solutions

- Turn-key solutions for the ARL X900 Spectrometers are pre-configured and calibrated in our factory using carefully selected certified refernce materials (CRM) samples, all set for your immediate use.
- Analytical conditions, parameters and calibrations optimized by our specialists provide the best accuracy and performance at the highest speed, delivering you repeatable standardized high-quality results.
- Our ready-to-use applications are trusted globally in demanding industrial environments, like metallurgy, cement and mining.

Standardless analysis with UniQuant package

- The factory-calibrated standardless analysis package is ready to use immediately.
- Quantitative elemental analysis results from F – Am of unknown samples are provided within minutes.
- The technique is ideal for non-production samples, unknown materials, or failure analysis.
- Peak-by-peak counting makes Thermo Scientific™ UniQuant™ Software the first choice for applications requiring great accuracy and the detection of low concentration levels.

Cement

- Cement, free lime, clinker
- Limestone and dolomite
- Slags
- Refractories and ceramics

Metals

- Iron, steel, DRI, pig iron
- Aluminum and alloys
- Copper and brass
- Nickel and super alloys
- Zinc, lead, tin, titanium
- Slags
- Refractories and ceramics

Minerals and mining

- General oxides
- Traces in soil and sediments
- Rocks and minerals
- Fluorspar

Tailored solutions for your analytical challenges

Whether it's optimizing cement production, analyzing various metals and alloys, or exploring minerals and ores, every industry, every production site and every process has it's unique challenges and priorities. The ARL X900 Spectrometer combines a reliable design with dedicated analytical configurations, to ensure the perfect match for your specific needs, unlocking the full potential of your operations.

Capability	Metals	Cement	Minerals and mining	Alu bath, DRI	Benefit
Dual-loading	●	●	●	●	Fastest time to result, lowest deadtime between samples
Automation	●	●	●	●	Continuous unattended operation, increasing output
Simultaneous XRF	●		●		Highest precision, lowest limit of detection (LoD) and no moving parts for maximum speed and reliability
SCX detectors	●		●		Improved accuracy and precision for matrix elements
Sequential XRF		●	●	●	Fast goniometer for maximum measurement time; adaptable to changing requirements, and backup for fixed channel monochromators
Compact, integrated XRD system		○	○	○	Complementary analytical capability for Direct Reduced Iron (DRI), Fe^{2+} in sinters, aluminum smelting, bath ratio, clinker phases, quartz in raw meal, limestone addition, degree of calcination in cyclones, …
Calibrations	○	○	○	○	Turn-key solutions delivering reliable results from day one
Tube above	○	●	●	●	Protected from sample breaking and any debris or drillings
Robust and stable instrument	●	●	●	●	Maximizes instrument uptime and delivers reliable analytical results

● Dark red icon = very important
○ Lighter red icon = important

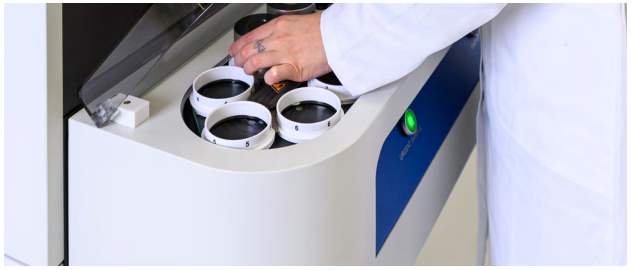
Speed & performance

Versitility & solutions

Reliability

OXSAS Analytical Software—simple, flexible and powerful

The Thermo Scientific™ OXSAS™ Analytical Software controls the ARL X900 Spectrometer and provides virtually unlimited analytical capacity and flexibility, and includes all the features needed for data management, instrument control, calibration, instrument set-up and diagnostics. OXSAS is designed to meet your needs throughout the lifetime of the instrument.

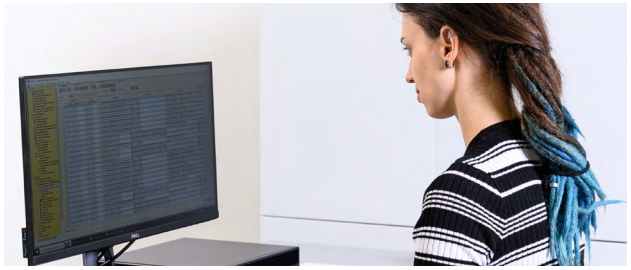


Routine operation made easy

- User-friendly interface, minimizing training and maximizing productivity.
- Simple EasyOXSAS interface for streamlined routine analysis.
- One click creation of a batch analysis, with support of priority sample for high throughput environments.

Limitless analytical capabilities

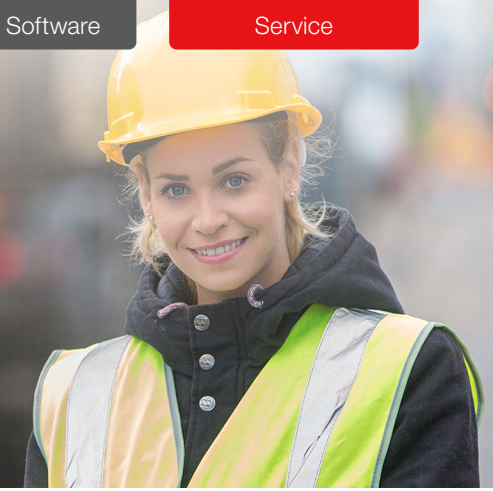
- Analytical Assistant module and templates to guide users through the process and ensure optimal analytical parameters for accurate results.
- Multi-variable regression (MVR) program for calibration curves.
- A range of correction models included to achieve better accuracy in multi-component matrices.



Process control at a glance

- Effective monitoring and maintenance tools to maximize system uptime.
- Real on-line integrated Statistical Process Control (SPC) for efficient monitoring and optimization.
- SCT Manager to provide comprehensive overview of Setting-up Samples, Control samples and Type standards, ensuring effective monitoring of instrument and methods.

We support you across the lifetime of your system



Global service logistics and field service assistance

No matter where you are, we have you covered.

Thermo Fisher Scientific maintains an extensive global service logistics network of central warehouses, regional hubs, and local stock locations. This allows us to be able to fulfill customer needs quickly upon a request.

We use a multi-level resources approach to support each field service engineer, providing them with comprehensive service network in order to deliver the best customer service.

Service solutions

The moment you purchase a Thermo Scientific system, your success becomes our utmost priority.

Our service solutions are available at the time of instrument purchase, during the warranty period, or after the warranty period has ended.

From remote support to on-site service contract agreements, whether you need on-site repair or application support, our service agents are here to support you.

Benefits

- Increase productivity and sample throughput.
- Maximize resources from our diverse service solutions.
- Boost uptime thanks to our quick resolution plan.
- Get expert advice to drive decisions that maximize instrument performance.
- Reduce costs with increased production capability.
- Receive dedicated training that allows you to exploit the full capabilities of your ARL X900 Spectrometer.

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Are you ready to unlock the power of the ARL X900 Spectrometer?

If you're interested in how the ARL X900 Spectrometer can accelerate measurements, enhance laboratory efficiency, and achieve precise results, it's time to take the next step. Discover the instrument configuration that best fits your industrial application and optimize your analytical processes.

Contact us today via email or visit our website to uncover the full potential of the ARL X900 Spectrometer.

Thermo Scientific ARL X900 Spectrometer series:

ARL X900 Spectrometer with 20-position rotation magazine

ARL X900 Spectrometer with large XY magazine

ARL X900 Spectrometer for SMS robotic automation

Learn more at **thermofisher.com/X900**

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