Precious Metal Element Spectrometer



Overview

SPECTRO offers a broad range of XRF and OES spectrometers optimized for precise analysis of precious metals, ensuring accuracy and reliability.

Key Takeaways

Precious metal element spectrometers are specialized instruments, such as XRF and OES analyzers, designed for precise, non-destructive elemental analysis of metals and alloys. Types of SpectrometersX-ray Fluorescence (XRF) Spectrometers XRF spectrometers are widely used for non-destructive analysis of precious metals like gold, silver, and platinum. They work by irradiating a sample with primary X-rays, causing the elements to emit characteristic secondary (fluorescent) X-rays.

These emissions are measured to determine the elemental composition.

XR

F analyzers can be benchtop models, such as the SPECTRO MIDEX or VR-T6, or portable handheld devices like the JITAI9201, offering fast, accurate results with minimal sample preparation. Optical Emission Spectrometry (OES) OES, also known as spark OES, uses electrical sparks to ablate a metal surface, exciting atoms in an argon plasma. The emitted light is analyzed to quantify elemental concentrations.

OE

S is highly precise and suitable for detecting trace elements and nonmetallic inclusions. Instruments like the Thermo Scientific ARL iSpark Plus Series are commonly used in laboratories for jewelry, automotive, and industrial metal analysis.

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Key Features and Capabilities

Accuracy and Detection Limits: High-performance spectrometers achieve ultra-low detection limits in the ppb–ppm range, with precision suitable for both major and trace elements. Sample Types: Capable of analyzing solids, powders, liquids, and irregularly shaped samples without extensive preparation. Automation and Throughput: Many instruments support automated measurement, data storage, and high sample throughput, enabling efficient laboratory or field operations.

Portability: Handheld XRF analyzers are lightweight, rugged, and equipped with features like Peltier cooling, automated beam switching, and onboard data management for field use. Software and Analysis: Advanced algorithms, such as Fundamental Parameter (FP) methods and proprietary gold-plating detection software (AuDIT), enhance measurement stability, detect plating, and provide quantitative results.

Applications

Jewelry and Retail: Verification of karat, detection of plating, and purity assessment. Mining and Recycling: Rapid elemental analysis of ores, alloys, and scrap metals. Laboratory and Industrial Use: Quality control, R&D, and regulatory compliance in refineries, foundries, and assay offices.

Notable ModelsSPECTRO MIDEX: Benchtop ED-XRF optimized for high precision in precious metal testing. VR-T6 XRF Analyzer: All-in-one benchtop XRF with ±0. 03% accuracy for gold and multi-element analysis.

JITAI9201 Handheld XRF: Portable, rugged, and capable of field analysis with automated features and large data storage.

AR

L iSpark Plus Series OES: Laboratory-grade spark OES for detailed elemental and inclusion analysis. These spectrometers provide reliable, fast, and precise elemental analysis, making them essential tools for industries handling precious metals.

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Article Content

Precious Metals Analysis | SPECTRO

SPECTRO offers a broad range of XRF and OES spectrometers optimized for precise analysis of precious metals, ensuring accuracy and reliability.

Portable XRF Metal Analyzer

This rugged 245x250x90mm portable spectrometer delivers fast, precise

Precious Metals Analysis | SPECTRO

For precious metals analysis, such as jewelry or dental alloys, fast and non-destructive XRF spectrometers which require little sample preparation are most frequently used for analysis, e.g.

XRF Analyzer (Precious Metals) – SPECTRO MIDEX

Our XRF Analyzer (Precious Metals) - SPECTRO MIDEX spectrometer is optimized for all your precious metal testing needs.

Solutions for Analyzing Precious Metals

Gain trust from your customer Thermo Scientific Niton XRF precious metal analyzers provide retailers, pawn shops, cash-for-gold businesses, jewelers, recyclers, and refineries with fast, reliable and

Advanced Technologies for Analyzing Precious Metals

We are dedicated to remaining your trusted industry partner in developing and applying technologies that help ensure accurate elemental identification, whether it''s jewelry, coins, scrap metal, or

GEMORO XRF GOLD & PRECIOUS METAL

Users can benefit from this fast and efficient technology, quickly identifying and measuring each element in jewelry, coins, watches, and more. This easy-to-use,

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Portable X-Ray Fluorescence Spectroscopy Among the most widely used techniques is handheld, portable X-ray fluorescence (XRF) spectroscopy. Handheld XRF spectroscopy has become a

Handheld Metal Alloy Tester Portable XRF Gold

It has high precision and fast speed, close to laboratory-level analysis level, and can visually display the percentage content and ppm content

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Desktop XRF Spectrometer Buyer Guide

How to Choose a Desktop XRF Spectrometer for Precious Metal Testing A desktop XRF spectrometer is a non-destructive elemental analysis instrument used to test gold, silver, platinum, palladium, alloy

XRF Spectrometer Buying Guide: Precious Metals 2026

Can one XRF analyzer handle both jewelry and industrial metals? Yes, but the instrument must have a broad enough elemental range and appropriate calibration modes. VRAY''s VR-M5

Essential Laboratory Equipment for Metals, Mining and Metallurgy ...

X-ray fluorescence (XRF) spectrometers for bulk and trace elements in solids Inductively coupled plasma optical emission spectrometers (ICP-OES) for trace metals in liquids Atomic

EVDENT Vanta Series Handheld Energy Dispersive X-Ray

Overview The EVDENT Vanta Series Handheld ED-XRF Spectrometer is an industrial-grade, field-deployable analytical instrument engineered for rapid, non-destructive elemental quantification of

Precious Metal Analyzers in a High-Value Market | Fisher Scientific

Optical emission spectroscopy (OES), for example, is valued for its sensitivity and precision in quantifying trace elements. Often referred to as spark OES, electrical sparks are used to ablate

LIMING XRF spectrometers

Discover the XRF spectrometer product range of LIMING. Contact the manufacturer directly.

EVDENT Vanta Handheld Energy Dispersive X-Ray Fluorescence

Overview The EVDENT Vanta Handheld ED-XRF Spectrometer is a field-deployable, laboratory-grade analytical instrument engineered for rapid, non-destructive elemental quantification in precious

CDOCAST Portable Handheld Atomic Absorption Spectrometer for

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ISO 19919:2025 introduces a sophisticated analytical method for determining the silver content in homogeneous jewellery materials and precious

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