

## Article Overview

Precious metal element detection spectrometers are specialized devices, primarily using X-ray fluorescence (XRF) or optical emission spectroscopy (OES), to accurately identify and quantify metals like gold, silver, platinum, and rhodium in various forms.

## Types of Spectrometers

1. **Handheld XRF Analyzers** Portable devices such as the JITA19201 and Vanta series allow on-site, rapid elemental analysis of precious metals. They are lightweight, rugged, and designed for field use, with features like high-sensitivity Si-PIN or SDD detectors, automated beam switching, and Peltier cooling for stable performance in varying temperatures (e.g., -35°C to 50°C). These analyzers provide non-destructive testing, immediate results, and can detect light elements and platinum group metals (PGMs) with high precision.

2. **Benchtop XRF Analyzers** Models like the VR-T6 offer high-precision laboratory analysis with an accuracy of  $\pm 0.03\%$  for 9999 gold. They accommodate solids, liquids, and powders, and feature micro-focused X-ray tubes and high-resolution detectors. Benchtop analyzers are ideal for jewelry, mining, and quality control labs, providing rapid, non-destructive testing with minimal sample preparation.

3. **Optical Emission Spectrometers (OES) and ICP-OES** For ultra-low detection limits and high precision, spark OES (e.g., ARL iSpark Plus) and ICP-OES systems are used. These are suitable for detailed analysis of pure precious metals and alloys, offering ppb-ppm detection limits, high throughput, and automation capabilities for laboratory environments.

## Key Features

- o **Accuracy and Sensitivity:** Handheld XRF analyzers detect trace elements and PGMs, while benchtop XRF and OES systems provide laboratory-grade precision.
- o **Sample Flexibility:** Can analyze solids, powders, liquids, and irregular shapes without extensive preparation.
- o **Data Management:** Modern analyzers include onboard storage, USB/Bluetooth connectivity, and software for exporting results to Excel or other formats.
- o **Safety and Durability:** Devices include radiation protection, interlocks, and rugged designs to withstand field conditions.
- o **Non-Destructive Testing:** XRF-based spectrometers allow testing without altering or destroying the sample, crucial for jewelry and collectible metals.

## Applications

- o **Jewelry and Coin Verification:** Ensures purity and detects plating or alloy composition.
- o **Mining and Exploration:** Rapid elemental analysis of ores and concentrates.
- o **Recycling and Refining:** Identifies valuable metals in scrap and industrial materials.



# Precious Metal Detection Spectrometer

o Quality Control Laboratories: Provides precise elemental composition for manufacturing and certification purposes. In summary, precious metal element detection spectrometers range from portable handheld XRF devices for field use to high-precision benchtop and OES systems for laboratory analysis. They provide fast, accurate, and non-destructive elemental identification, making them essential tools in jewelry, mining, recycling, and quality control industries .

For precious metals analysis, such as jewelry or dental alloys, fast and non-destructive XRF spectrometers which require little

The GOLDScope SD#174; 600 is Fischer's most powerful XRF analyzer for gold authenticity testing and jewelry and precious metals

SPECTRO offers a broad range of XRF and OES spectrometers optimized for precise analysis of precious

Users can benefit from this fast and efficient technology, quickly

The SPECTRO MIDEX Precious Metals XRF spectrometer was developed for the advanced elemental

XRF-K5 precious metal analyzer is an X-ray fluorescence spectrometer made by PURERAY Instrument

Cost-effective X-ray fluorescence analysis around gold and precious metals. Not everything that glitters is

The QualiEDX(TM) 600 features a highly efficient and reliable proportional counter as its detector, enabling accurate analysis of

XRF spectrometer to precisely determine the presence and concentration of precious metal and trace alloying elements in 3-10

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

Niton(TM) DXL Precious Metal Analyzer. A fast, simple, nondestructive solution for gold analysis and

The GEMORO XRF is a top-of-the-line Energy Dispersive XRF Spectrometer, perfect for jewelers, appraisers, and precious metal

Gain trust from your customer Thermo Scientific Niton XRF precious metal analyzers provide retailers, pawn shops, cash-for-gold

Our GEMORO XRF is a handheld, portable Energy Dispersive XRF Spectrometer designed for retail



## Precious Metal Detection Spectrometer

This rugged 245x250x90mm portable spectrometer delivers fast, precise

Meet your metal analysis needs anywhere with the JITA19201 Handheld XRF Analyzer. This rugged

Web: <https://morwarreconst.co.za>

