**755, Liyuan North Road, Ningbo, China**

# ANALYSIS & SOURCING

## BY THAOSEN

**Buyer:** [redacted]
**Host organization**: [redacted]

**Period:** [redacted]
**Sourcing area:** Asia , China

We have confidentiality agreements with our clients.
The black squares are therefore added on the document in order to respect our confidentiality policy.

# SUMMARY

--- Freemium Report ---

## Introduction

We have received the purchasing intention from [redacted] asked us to source relative product (precious metal analyzer) in Chinese market. To clarify the requirement, [redacted] they intend to choose precious metal analyzer with good quality from China, meanwhile, they need to maximize the mobility and portability of the device in order to facilitate usage and operation.

The team of THAOSEN had done a market research for one week, managing to review various types of metal analyzers in China. We will show a report below that was divided into different aspects to introduce the product. We expect our report can make our client understand better about the targeted goods in Chinese market and make a best decision for its future business.

## Characteristics:

- [redacted]
- 
- 

## Abstract

Precious metals require — and reward — careful analysis. Their high monetary value means that purity is a prime consideration when trading in these metals or products made from them. Different alloys must be identified and their composition verified. Adulteration, while not always easy to detect, can dramatically affect value.

Analysts face various difficulties. The scope of precious metals analysis extends from trace levels to 100%. Most of these metals are resistant to dissolution by all but the strongest acids. Some traditional analytical methods like **fire assay are time-consuming and demand a high level of skill**.

Three modern techniques offer widely used solutions. **Energy-dispersive X-ray fluorescence (ED-XRF)** and **optical emission spectrometry (OES)** can be used without specialist analytical training to rapidly and accurately analyze bullion, jewelry, and alloys. A variation of OES, **inductively coupled plasma optical emission spectrometry (ICP-OES)**, is an ideal tool for the analysis of bulk materials such as ores, and for the determination of trace impurities.

All three methods work on the **spectroscopic principle**, which relies on the internal **structure of the atoms** of the material being analyzed. The atoms of the sample are excited by an external source of energy, which is absorbed by and raises the energy level of the electrons in the sample atoms. This excited state is unstable, so the electrons rapidly return to their normal state, re-emitting energy as they do so. The energy emitted, or emission spectrum, is characteristic of the elements contained in the sample; its intensity is proportional to their concentration. **The techniques differ in the type of energy used to excite the sample atoms** (which also governs the type of samples that can be handled), and in the technology used to **analyze and detect the emitted radiation.** The following table summarizes the main features of the techniques and their uses in precious metals analysis:

| Technique | Excitation | Spectrum Analysis | Detection | Typical Analyses |
|---|---|---|---|---|
| ED-XRF | X-rays from low power (40 W or less) X-ray tube | Solid state Silicon Drift Detector (SDD) or Si PIN Detector, capable of discriminating between emissions from different elements. | | Purity of solid metals eg bullion, pin samples, coins, jewelry. PM's in bulk recycled materials catalysts, electronic waste |
| OES | Electric arc or spark discharge | Optical poly-chromator using diffraction grating | CCD and/or photomultiplier | Impurities in metals, eg bullion, pin samples |
| ICP-OES | Inductively coupled plasma | Optical poly-chromator using diffraction grating | CCD and/or photomultiplier | Traces of PM's in fire assay "buttons". Impuri-ties in PM's and alloys, |

## ED-XRF Analysis

ED-XRF spectrometers are based on the energy-dispersive-X-ray-fluorescence analysis method. The **atoms** in the sample material, which could be any solid, powder or liquid are excited by X-Rays emitted from an **X-Ray tube** or **radioisotope**. For increasing sensitivity, the primary excitation radiation can be polarized by using specific targets between the X-Ray tube and the sample (ED-P(polarization)-XRF). All element **specific X-Ray fluorescence signals** emitted by the atoms after the **photoelectric ionization** are measured simultaneously in a fixed mounted semi-conductor detector or sealed gas-proportional counter.

The **radiation intensity of each element signal,** which is proportional to the concentration of the element in the sample, is recalculated internally from a stored set of calibration curves and can be **shown directly in concentration units**.

**ED-XRF is the most widely used** analytical technique in the precious metals industry. Unlike many spectroscopic techniques, it **doesn't require the sample to be atomized** to enable excitation. It can **analyze solid samples directly**. Unlike methods requiring fusion or dissolution, it's **nondestructive**. This is critical to its usefulness in analyzing jewelry and other valuable items without damage or removal of precious metal. Finally, it's ideal for the detection of counterfeiting and for other forensic work.

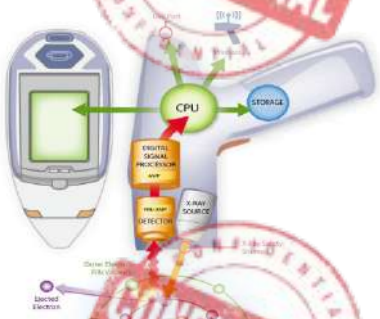

## WHY ED-XRF?

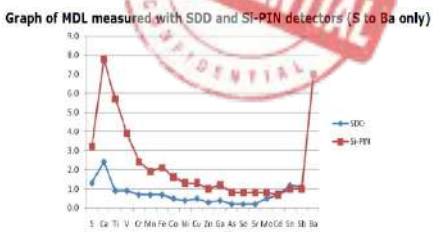
- **Easy to operate without complex chemical reagent.**
- **Direct to use without damaging the sample.**
- **Being used in the most of analyzers, fulfilling the need of portability.**
- **More choices of device to choose.**
- **Meeting the client's main requirement.**

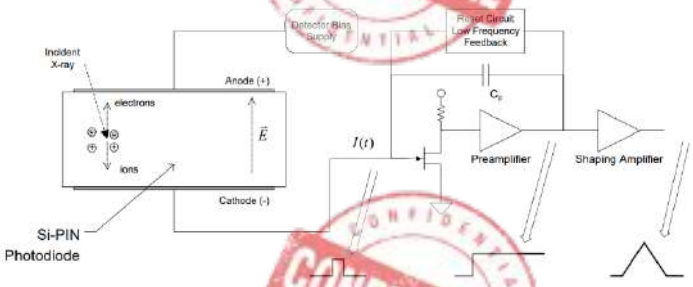
## Core Component Comparison

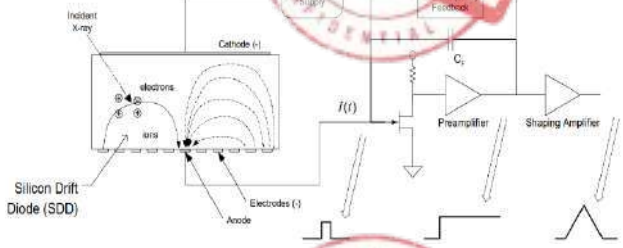
➢ *Detectors: Silicon Drift (SDD) vs. PIN-Diode (Si-PIN)*

Most lines of XRF Spectrometers will typically offer a model with a proportional counter detection system (for basic coating thickness measurements) and have additional systems with higher resolution detector technology, either **Silicon Drift Detection (SDD)** or **Si-PIN Diode Detectors (Si-PIN)** for elemental analysis interests. The sensitivity and performance at different energies when equipped with different detectors is expressed in the **minimum detection limits (MDL)** of the different elements.




✓ The **Si-PIN** is available with a larger active area and thicker depletion depth. Where resolution is not critical but **high detection efficiency** and **lower cost** are important, Si-PIN is the detector of choice. To distinguish 999, 9999 gold. (0.05% accuracy)

✓ The **SDD** is a more complicated device to manufacturer so is **more expensive** than a Si-PIN. The SDD has **better energy resolution** than a Si-PIN of the same area. The SDD has much better energy resolution at short peaking times, which is particularly helpful at **high count rates**. So where the highest resolution is needed, or where good resolution is needed at high count rates, the SDD is the detector of choice. To distinguish 9993, 9995, 9997, 9999 gold. (0.01% accuracy)

## Western Market

Thermo Fisher Scientific is an American biotechnology product development company located in Waltham, Massachusetts, and was created in 2006 by the merger of Thermo Electron and Fisher Scientific. In April 2013, after a competitive bidding with Hoffmann-La Roche, Thermo Fisher acquired Life Technologies Corporation for US$13.6 billion in a deal that would rank the firm as one of the leading companies in the genetic testing and precision laboratory equipment markets.

SPECTRO is a manufacturer of elemental analyzers using optical emission spectroscopy and x-ray fluorescence spectrometry. The company's headquarters are located in Kleve, Germany. It was founded in 1979 and specialized in metal analyzers based on optical emission (arc/spark). These were later followed by elemental analyzers based on inductively coupled plasma (ICP) optical emission and x-ray fluorescence (XRF) spectrometry. SPECTRO is a major provider or analytical instrumentation with an installed base of over 30,000 spectrometers worldwide. In 2005, SPECTRO became part of AMETEK's Material Analysis Division.

## Main Selling Category in China

➢ [redacted]

[redacted] device dedicated to screening and analysis of harmful elements restricted by RoHS / ELV regulations. Its integrated halogen-free analysis technology is equipped with an intelligent vacuum system. It uses low-energy X-rays to excite light elements and detects any harmful halogens At the same time, material products are also suitable for all-element and ROHS analysis. It has the advantages of high analysis accuracy, a wide range of analyzable elements, and simple and fast testing. The results are reliable and accurate, and meet the new national standard.

➢ [redacted]

[redacted] devices are recognized for ruggedness and reliability on the job. They offer metals or nonmetals identification in seconds, with innovative technologies and designs that provide repeatable, laboratory-quality results. Simple, user-friendly displays and efficient ergonomics make these instruments extremely easy to use.

➢ [redacted]

[redacted] is designed for safe, high-quality energy dispersive X-ray fluorescence (EDXRF) analysis in the field. This high-performance instrument is equipped with a secure closed-ray sample compartment, and its flexible analysis software can perform a variety of factory default and user-defined calibrations without the need for sample preparation. The collection and analysis operations are simple and convenient, and their functions are comparable A mobile laboratory.

[redacted]

# Model A Handheld Analyzer



| | |
|---|---|
| Weight net | 1.6Kg (including battery) |
| Device size (mm) | 254 x 79 x 280 (L x W x H) |
| Excitation source | [redacted] |
| Detector | |
| Detection range | |
| Display system | |
| Data Processing | |
| Heat dissipation | |
| Safety level | |
| Power system | |

**Price:**

[redacted]

# Model B Mobile X-ray Lab

| | |
|---|---|
| Device size (mm) | [redacted] |
| Sample Chamber (mm) | |
| Gross Weight | |
| Excitation source | |
| Detector | |
| OS | |
| Power system | |
| Resolution | |
| Data transmit | |
| Operating temperature | |
| Operating humidity | |
| Screen | |
| Testing time | |
| Safety level | |
| Characteristic | |

**Price:**

[redacted]

# Supplier Profile

Not available in Freemium report

Co., Ltd.

| Location | Map |
| --- | --- |
| [redacted] | |

| | |
| --- | --- |
| Business organization | [redacted] |
| Registered capital | |
| Date of establishment | |
| Sector | |
| Business scope | |
| Employee | |
| Patent | |
| OEM | |
| ODM | |

[redacted]

# Model C Desktop Analyzer

**Quick Features:**

- Provides Accuracy close to Fire Assay Standards.
- Uses Advanced Amptek USA Si-Pin Diode Detector.
- 100% Human Safe.
- Life Time Maintenance Support.

| | |
|---|---|
| Working Principle: | [redacted] |
| Precision: | |
| Operating Environment: | |
| High Voltage: | |
| Detector: | |
| Resolution: | |
| Testable Elements: | |
| Inbuilt Computer | |
| Inbuilt Touch Screen | |
| Printer | |
| X-ray Source | |
| Input Voltage | |
| Rated Power | |
| Size(mm): | |
| N/G Weight(KG): | |

*Need to be plugged in when working*

**Price:**

[redacted]

# Model D Desktop Analyzer

**Quick Features:**

- Italian designed Portable XRF Gold Analyzer
- Detects 20+ Elements Precisely close to Fire Assay
- Identifies Prohibited Elements (Powder) Iridium, Ruthenium, Osmium, etc.
- Lead (Pb) glass to guarantee 100% human safe
- One Key to Test
- Simple software and user interface makes it easy to operate

| | |
|---|---|
| Working Principle: | [redacted] |
| Precision: | |
| Operating Environment: | |
| Integrated X-Ray Generator | |
| Detector: | |
| Resolution: | |
| Testable Elements: | |
| Inbuilt Computer | |
| Inbuilt Touch Screen | |
| Cover material | |
| Input Voltage | |
| Rated Power | |
| Instrument dimension(mm): | |
| Testing chamber dimension (mm) | |
| N/G Weight(KG): | |

*Need to be plugged in when working*

[redacted]

# Supplier Profile Not available in Freemium report Co., Ltd

| Location | Map |
|---|---|
| [redacted] | |

| | |
|---|---|
| **Business organization** | [redacted] |
| **Registered capital** | |
| **Date of establishment** | |
| **Sector** | |
| **Business scope** | |
| **Employee** | |
| **Patent** | |
| **OEM** | |
| **ODM** | |

[redacted]

# Transportation Solution

## Ocean Shipping

| Shipping company | Delivery time | Fee |
|---|---|---|
| MSC | Premium Service | |
| MAERSK | | |
| CMA CGM | | |
| YML | | |

## Thaosen Comment

This part of text is proposed to provide clients the comment that has been issued by Thaosen purchasing team when we analyze the market and communicate with targeted suppliers above in China, which could facilitate buyers to make a most suitable choice through referring to more detailed and implicit information. We always spare no efforts to offer supply side situation via the most completed dimension.

Premium Service

## Question Remaining

[redacted]