

ABOUT US

LANScientific Co., LTD. has been devoted to R&D of precise instrument technology since founded in 2012. With more than 10 significant innovation patents, LANScientific has been increasingly professional and mature in fields including XRF, TXRF, EDXRF, X-Ray crystallography, XRD, RAMAN, SEM, LIBS, X-Ray optical devices, laboratory automation and X-Ray sources.

The company makes full use of years of accumulated professional technical knowledge to provide fully integrated analytical solutions for customers' increasingly complex and diverse social issues and needs with customer-oriented and continuous innovation as enterprise culture.



LANScientific



TrueX Handheld X-ray Fluorescence Analyzer

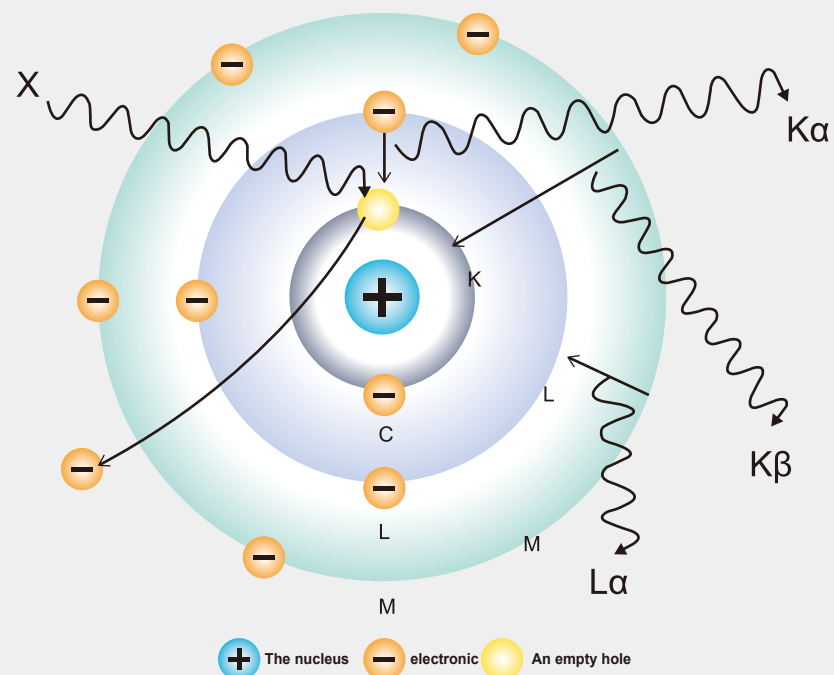
Provide optimal solutions for your analysis need

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How are characteristic x-rays generated?



- The sample is bombarded with X-rays, and the sample is excited to produce X-ray fluorescence.
- which usually punches the electrons in the inner layers of the K and L layers of the elemental atom layers out of the atoms, and the holes created are filled by high-energy outer electrons. High-energy electrons supplemented into low-energy orbits radiate excess energy in X-ray fluorescence.
- These radiated spectral lines contain the characteristics of various elements, like fingerprints, and are independent of the chemical valence state of the atom. The intensity of radiation is proportional to the concentration of this element in the sample.

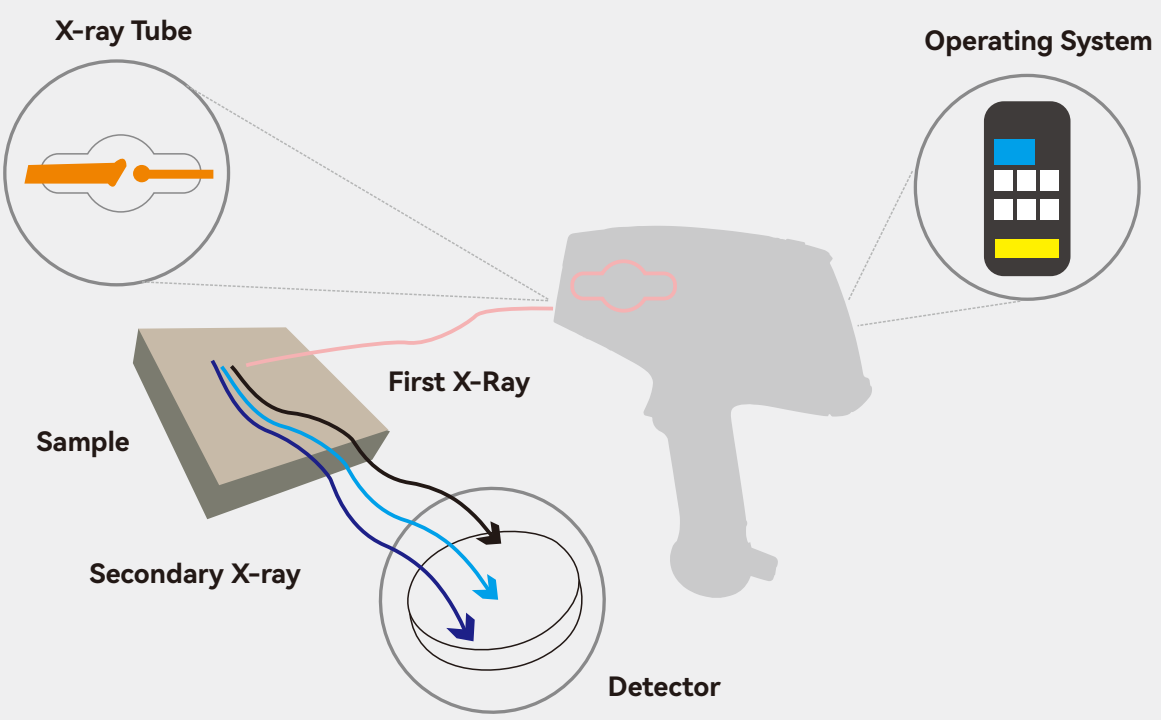
TrueX Handheld Analyzer

LANScientific TrueX handheld X-ray fluorescence analyzer is a handheld XRF instrument with excellent performance designed by LANScientific Co., Ltd. with many years of XRF technology research and development experience, combining optoelectronics, microelectronics and computer software and other technologies.

The LANScientific TrueX handheld X-ray fluorescence analyzer weighs 1.5kg and is highly flexible and portable. It analyzer adopts a new high-speed digital multi-channel technology, a new grade library identification system and Super-FP method processing technology. Compared with similar products on the market, the TrueX handheld analyzer has faster measurement speed, higher measurement accuracy and stronger measurement consistency. The instrument is not only compact, light, and has excellent performance, but also has a wide range of applications. It can meet users' requirements for detection and analysis of various elements such as Mg, Al, Si, P, S, Ti, N, Cu, etc., and can also customize the best solution according to customer needs.



How does an X-ray fluorescence analyzer work?



Appearance Display



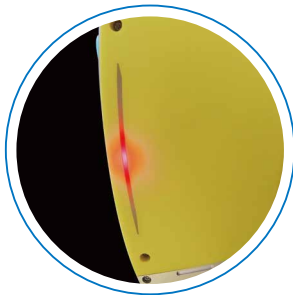
Intelligent two-color early warning system, the green indicator turns on when power is turned on.



It has better backlight performance and is still clearly visible under strong light in the wild.



There is no need to prepare samples. The instrument can directly measure the surface of the sample. The instrument can be held in hand for rapid detection, or it can also use the test stand to conduct safety testing of small items.



The red indicator flashes during the test and the instrument status is clear.



Ultrashort μm optical path design—significantly improves the excitation effect of light elements Mg, Al, Si, P, and S without the need for nitrogen filling.



One-touch operation. "start up - test - view results", the entire analysis process can be completed in just a few seconds, and the operation is simple, even non-technical personnel can easily master it.



Full range of accessories

- 1

High-strength protective box with good moisture-proof, shock-proof and dust-proof functions.
- 2

The stand (optional) allows users to test different samples, making the user's operation safer and more convenient.
- 3

The intelligent battery on the US bus can monitor the remaining power of the battery and backup battery in real time.
- 4

Reference samples are used by users to be standard samples for later testing of analytical instruments.
- 5

GPS (optional) can be combined with the built-in GPS latitude, longitude, altitude and other data to construct a three-dimensional geographical distribution map of element content.
- 6

Portable Bluetooth printer (optional) can realize real-time printing of data on the spot.



Technical Parameters

Weight	1.5kg
Size	254mm x 79mm x 280mm(LxWxH)
Excitation source	50KV/200uA Max, tube voltage/ current adjustable, Ag, Au, W, Rh targets(optional)
Detector	Si-Pin detector, SDD detector(optional)
Detection range	Na-U
Display system	Industrial-grade resistive touch screen, screen size: 4.3 inches Dedicated operating system and LANScientific analysis software Operation language includes Chinese, English and other languages Automatically adjust the display brightness according to the external environment brightness
Data processing	Built-in 32G memory USB, Bluetooth, WIFI, the device can be connected to the Internet, the instrument can be set up and repaired remotely Data can be exported in EXCEL and PDF form -ats, and users can customize and create professional reports
Heat dissipation	The instrument is equipped with a dedicated T-slot heat dissipation device to improve the heat dissipation performance of the instrument.No need to wait for the detector to cool down frequently
Safety	Built-in DoubleBeam™ technology automatically senses whether there is a sample in front of test window Improve the safety and protection level of the radiation Waterproof, dustproof and shockproof suitcase LANScientific special safety rope
Power supply system	Intelligent battery with MSBUS bus can monitor the battery in real time and the remaining capacity of the backup battery,Batteries comply with aviation dangerous goods transport regulations A single battery can last about 8 hours

Note: All configurations and specifications are subject to change without prior notice

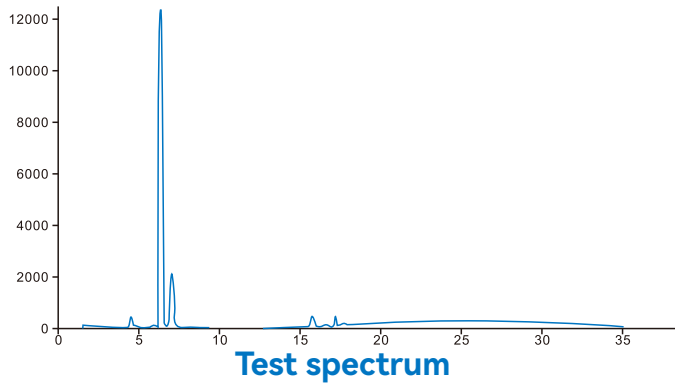


Overview of the environmental industry

Heavy metal pollution in soil refers to the phenomenon that the content of heavy metal elements in the soil is significantly higher than its natural background value, causing ecological damage and deterioration of environmental quality. Generally speaking, the elements that cause heavy metal pollution in soil mainly include 8 elements of Zn, Cu, Cr, Cd, Pb, Ni, Hg, and As. TrueX can perform multi-element analysis and detection on various soils and sediments (solids, dust, powder, solid bodies, debris, mud filter materials, film layers and other tangible objects can be detected), and can quickly obtain reliable analytical data to assist in real-time strategy formulation, and the detection cost is much lower than laboratory analysis.

Typical Applications

When we use TrueX to test soil samples, the following figure shows the test results of each element in the soil samples:



Soil	#1203	40
Elem	ppm	+/-
Fe	131067.78	4173.5
Ti	20425.07	1214.83
Mn	1765.34	65.39
K	1635.96	82.15
Ca	1084.31	39.25
Cr	414.95	17.99
Zr	320.73	11.89
Ni	277.94	8.59
V	241.43	11.36
Zn	140.51	6.03
Co	98.55	4.09
Cu	96.38	2.99
Nb	63.87	3.4
Y	26.77	1.2

Typical applications

- 1

Rapid investigation and measurement of polluted metal components, pollution patterns, and pollution boundaries in polluted water and wastewater.
- 2

On-site monitoring of metals involved in RCRA and priority-controlled polluted metals.
- 3

Analysis of sand, sludge, solid waste, soil, mud; dust, filtration, film layer, etc.
- 4

On-site disposal of original land, polluted water, wastewater, and other harmful substances, and provide a theoretical basis for in-depth analysis of pollution control and remediation methods.



Alloy Industry

It can be used to quickly determine the metal elements in iron-based, nickel-based, copper-based and other alloys.

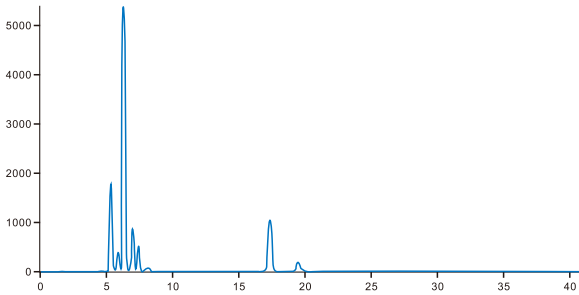
Alloy Industry Overview

The composition of metal is the main factor that determines the performance of materials. TrueX can perform on-site/factory testing and rapid classification of metal materials, complete the test in seconds, and provide users with fast, efficient and accurate data information even in harsh environments. It improves the efficiency of testing and is a powerful tool for quality control (QA/QC), material reliability identification (PMI), mixed material identification, waste sorting (Recycling), and grade identification (Grade ID) in industries such as steel smelting, non-ferrous metals, petrochemical refining, fine chemicals, pharmaceuticals, and power stations.

Application Case

30-second test result of 316SS stainless steel standard sample Test accuracy of each element

Reading	Mode	V%	Cr%	Mn%	Fe%	Ni%	Cu%	Mo%
No1	ALLOYS	0.13	16.56	1.22	69.558	10.18	0.322	2.03
No2	ALLOYS	0.132	16.66	1.29	69.438	10.15	0.32	2.01
No3	ALLOYS	0.13	16.61	1.2	69.645	10.05	0.315	2.05
No4	ALLOYS	0.128	16.62	1.19	69.701	10.03	0.331	2
No5	ALLOYS	0.126	16.68	1.18	69.489	10.15	0.325	2.05



Test spectrum



Alloy #457 15.1 34%			
316SS 316Ti 317SS			
316SS 0.26 Exact			
Elem	%	+/-	SPEC
Fe	69.2	0.31	[63.0-72.0]
Cr	16.54	0.2	[16.0-19.0]
Ni	10.5	0.27	[10.0-14.0]
Mo	2.1	0.02	[1.9-2.8]
Mn	1.03	0.08	[0.0-2.21]
Cu	0.41	0.05	[0.0-1.0]
W	0.11	0.09	
V	0.08	0.02	
Nb	0.02	0.01	

Analyzable Alloy Family

- Iron-based alloy series (stainless steel, chromium/molybdenum alloy steel, low alloy steel, tool steel, seamless steel)
- Nickel-based alloy series (nickel alloy, nickel/cobalt superalloy)
- Cobalt-based alloy series
- Titanium-based alloy series
- Copper-based alloy series (bronze, brass, copper-nickel alloy, etc.)
- High-temperature alloy (molybdenum-tungsten alloy)
- Other alloys



Alloy material identification

Material inspection is the key to ensure that metal products use qualified materials. The instrument is suitable for metal smelting, machinery manufacturing, pressure vessels, power stations, petrochemicals, biopharmaceuticals, aerospace, cement fertilizer and other industries.



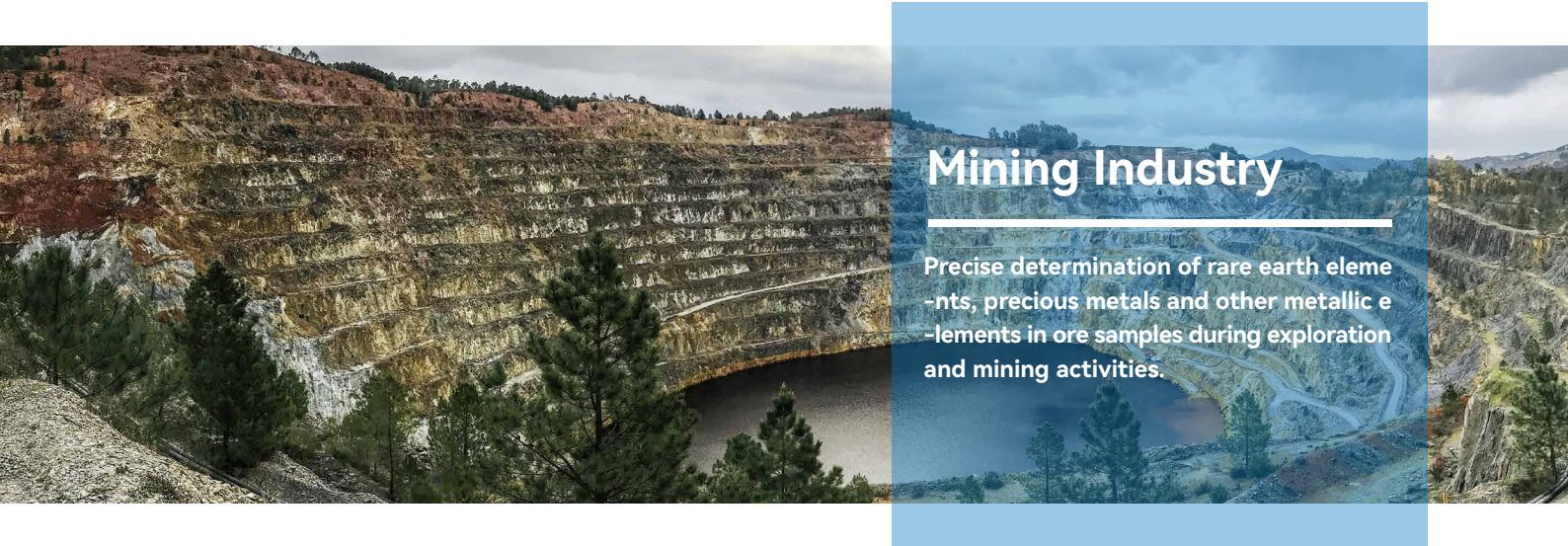
Quality Assurance and Quality Control

In the metal manufacturing industry, quality assurance and quality control (QA/QC) of materials, semi-finished products and finished products is essential. Analyzers can avoid mixing materials or using unqualified materials, which will inevitably bring losses to the company.

Metal Scrap Recycling

Recycling and reuse of scrap metals. On-site analysis and testing of various alloy types and material quality. Provides necessary information for buyers and sellers to make quick and reliable judgments during transactions.





Application Description

In the field of exploration and mining, traditional laboratory analysis generally takes several hours or even days to obtain analytical results. It is time-consuming and will bring high testing costs. TrueX breaks the limitations of laboratory environmental requirement and can provide fast and accurate elemental analysis results at all stages of mining activities, from grassroots exploration and development to ore grade control and even environmental investigations, with little or no sample preparation. Compared with traditional laboratory methods, it has high sample throughput and increased sample density, saving time and labor.

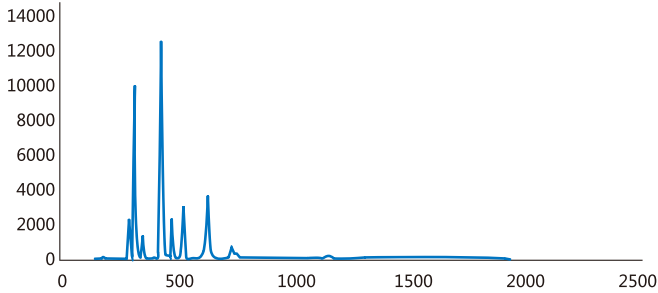
Application Case

80-second test result of lead-zinc ore standard sample

No.	Pattern	Fe ₂ O ₃ %	Mn%	Zn%	As%	Pb%
No1	Mining	20.340	5.060	13.220	0.022	4.095
No2	Mining	20.810	5.170	13.180	0.031	4.160
No3	Mining	20.850	5.110	13.210	0.009	4.206
No4	Mining	20.050	5.060	13.050	0.012	4.205
No5	Mining	20.060	5.080	12.980	0.031	3.950

Note: This is the laboratory test data with slightly different instruments

Test spectrum



Mining		#108	30	48 % 
Elem	%	+/-		
Zn	0.364	0.034		
Cu	0.083	0.057		
As	0.719	0.082		
Pb	2.798	0.121		
Zr	0.993	0.183		
Mn	0.825	0.315		
Sn	73.848	0.537		
Fe	21.219	0.692		

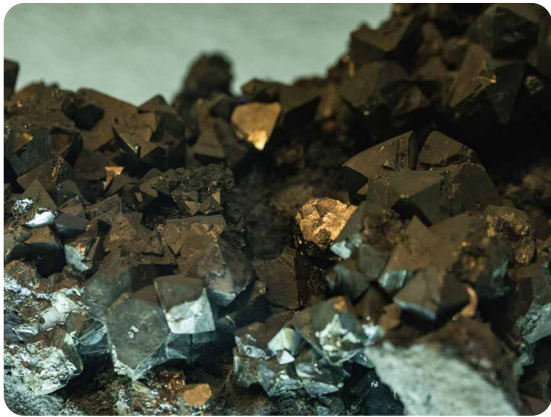


Analyzable ore types

- Iron ore (hematite, ilmenite, siderite, etc.)
- Copper ore (chalcopyrite, cuprite, malachite, etc.)
- Chromium ore (chromite spinel, chromite, chromium bismuth ore, etc.)
- Molybdenum ore (molybdenite, copper-molybdenum ore, tungsten-molybdenum ore, etc.)
- Tungsten ore (scheelite, wolframite, tin-tungsten ore, etc.)
- Tantalum ore (tantalite, columbite, pyrochlore, etc.)
- Lead-zinc ore (galena, sphalerite, cerussite, etc.)
- Nickel ore (latite nickel ore, copper-nickel sulfide ore, etc.)
- Other minerals

Typical applications

1. Geological exploration/ore prospecting and mineral processing/grade analysis
2. Mineral research
3. Tailings treatment
4. Slag recycling





Application Description

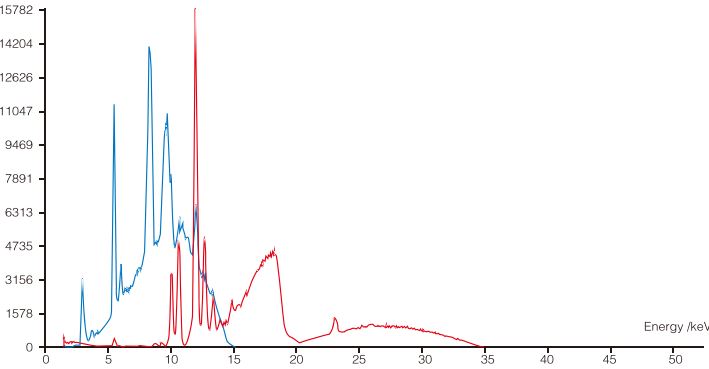
With the development of social economy, the harm of harmful elements to people has become an important issue that cannot be avoided. Countries around the world have successively introduced regulations to control the content of harmful elements in products, and the limit values for harmful elements are gradually decreasing.

TrueX RoHS can easily meet the testing needs of RoHS regulatory updates and implementation, The TrueX RoHS analyzer can be used to analyze the chemical composition of consumer products such as toys, clothing, footwear and electronic equipment in the field. It can quickly detect toxic elements such as lead Pb,Cd, Hg, Cr, Br and determine whether these consumer products comply with RoHS regulations. With the advantages of high sensitivity and high repeatability, it is the ideal choice for incoming material inspection, safety audit of finished products and storage products.

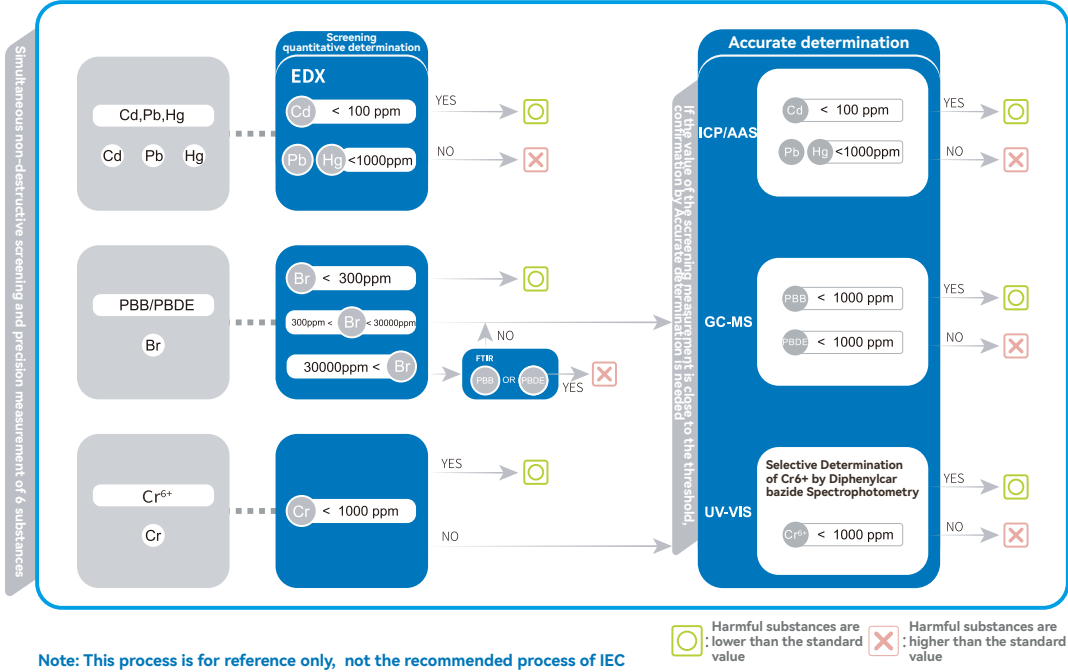
Standards

- Comply with EU ROHS2.0 Directive 2011/65/EU
- Comply with halogen-free directive IEC61249-2-21
- Comply with REACH directive
- Comply with toy En71 directive
- Comply with US CPSIA Consumer Product Safety Improvement Act
- Comply with China-RoHS voluntary certification
- Comply with IEC62321 standard
- Comply with GB/T26125-2011

Test spectrum



Recommended screening process



Typical Application

- Restricted toxic elements in consumer products;
- Composition analysis and grade identification of metal parts/fasteners;
- Chlorine and bromine in polymer materials and plastic items;
- Cadmium, lead and mercury in packaging materials;
- Cadmium, lead, mercury, mercury and other elements in electronic components, connectors, cables, etc.;
- Solder - the state of raw materials and the content of elements such as tin, lead, copper, silver, myrtle, cadmium and other elements contained in the solder at different stages of use; whether high-reliability electronic components contain an appropriate amount of lead.



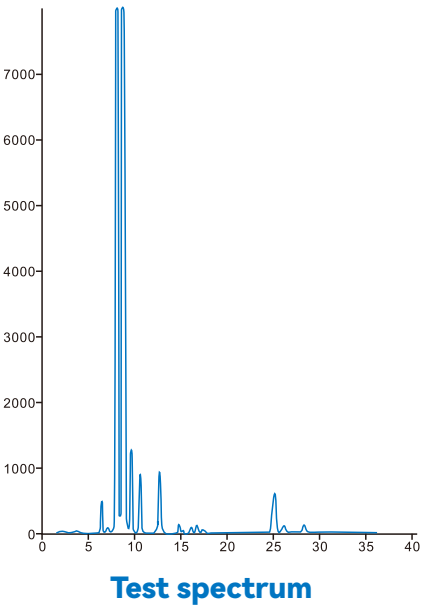


Summary of Applications in Archeology/Artwork Fields

Humanity has a long history and has left behind countless precious cultural heritages, such as exquisite jades, murals, ceramics, textiles, glass, etc. The analysis of minerals, pigments, enamels, fibers, lacquers and resins in cultural relics and artworks is of great significance to our protection of history and study of human culture. The TrueX handheld analyzer can quickly, on-site, and non-destructively identify elements of cultural relics and artworks. In the archaeological industry, it provides reliable information on the age, composition, technology, authenticity, and restoration of cultural relics and artworks, providing powerful assistance for the research of cultural relics.

Application Case

We use an ancient coin as the test sample, and routinely test the concentration of copper, tin, iron, silver, etc. in the sample. The sample test results are as follows:



Application Case

- 1. Material identification: TrueX analyzer can perform material analysis without damaging cultural relics.
- 2. Authenticity identification: Although cultural relics are the same in appearance, they are still different in composition. Based on this feature, the TrueX handheld analyzer can be used to authenticate cultural relics.
- 3. Cultural relic dating: The same type of antiques have different production processes and ingredients in different dynasties. Therefore, the TrueX archaeological analyzer can be used to determine the composition of cultural relics. According to the composition of cultural relics, it can be compared with the Chinese ancient ceramics database to achieve the effect of dating.
- 4. Analysis of the origin of cultural relics and their mineral sources: There is a certain relationship between the composition of cultural relics and the time and place of their production. The TrueX analyzer can know the composition of cultural relics, and the cluster analysis and other methods can be used to determine their origin and mineral sources. This can provide meaningful information for historical research.
- 5. Cultural relic protection: Cultural relic protection is inseparable from the TrueX analyzer. In addition to identifying the composition of cultural relics, X-ray fluorescence spectroscopy can also be used to observe whether the composition of cultural relics has changed. When studying the underground burial environment of cultural relics, the composition of groundwater, soil around the cultural relics, chemical pollutants, etc. can also be determined by X-ray fluorescence spectrometry analysis technology.



Bronze



Obsidian



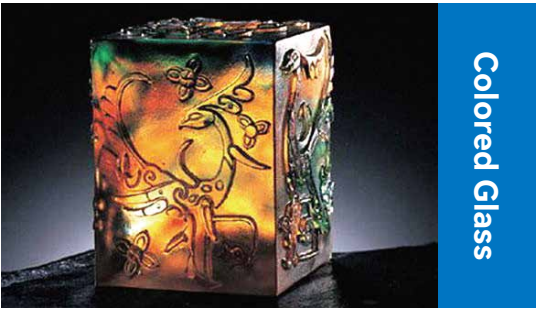
Porcelain



Mural



Oil Painting



Colored Glass



Coating thickness analysis industry

It is mainly used for the thickness measurement of metal coatings, and the determination of plating solution and coating content.

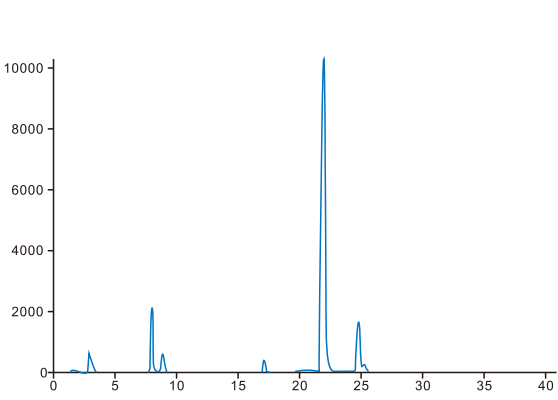
Coating Thickness Measurement Application Introduction

Coating is an essential basic process in social and economic development. It is mainly used to improve the surface appearance of plated parts, prevent corrosion of metal parts, and improve the conductivity of metal in circuit board circuit patterns. Common types of coating include chromium coating, nickel coating, copper coating , etc. TrueX instruments are suitable for coating thickness measurement and material analysis. it has the advantages of non-destructive, multi-layer alloy measurement, high productivity, high reproducibility, etc. It can be used to quantitatively and qualitatively analyze the elemental composition of samples.

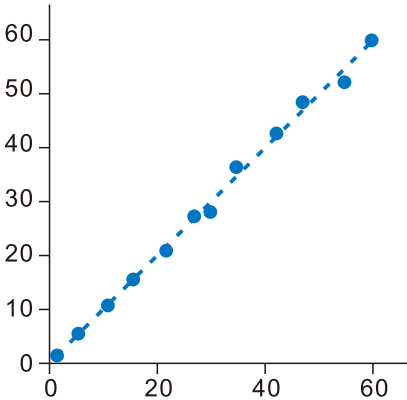
Application Case

We used the Coating mode of the TrueX analyzer to analyze a series of copper-silver-coated samples. The results are as follows:

No.	Silver plating thickness	Test value	Uncertainty	Relative error
1	0.91	0.954	0.015	0.044
2	5.08	5.16	0.03	0.08
3	10.62	10.28	0.06	0.34
4	15.65	15.2	0.08	0.45



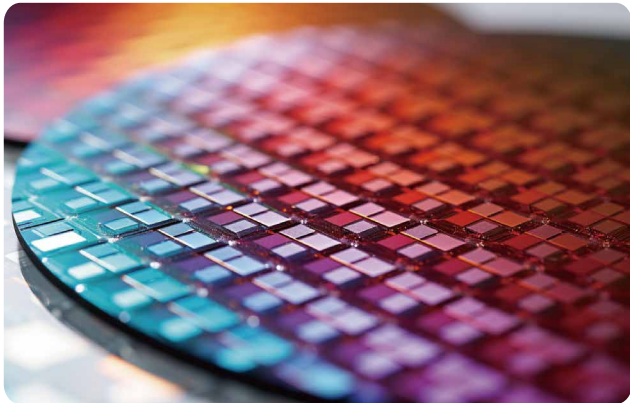
Test spectrum



Correction curve

Typical Applications

- Wafer semiconductors
- Electronic components
- Energy and power
- Jewelry
- Hardware and sanitary ware
- Automotive industry and others





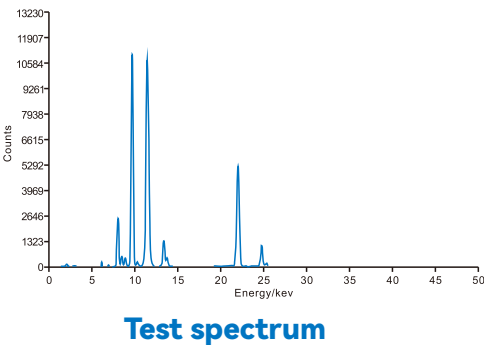
Precious Metal Industry

It can accurately analyze the content of gold, silver, platinum, copper and other elements in gold, platinum and K gold jewelry.

Overview of Precious Metals Industry Applications

Precious metals mainly refer to gold, silver, and platinum group metal elements (ruthenium, rhodium, palladium, osmium, iridium, platinum), and their purity detection is generally based on the new national standard GB/T18043-2013. Traditional analysis methods such as touchstone method, ash blowing method, fire assay, nitric acid test and other analysis methods belong to destructive analysis, which is not only consumable, but also takes longer time to prepare samples. Compared with traditional detection methods, LANScientific TrueX handheld analyzer is simple to operate and completely non-destructive. It is an ideal instrument for analyzing gold and other precious metals. It has been widely used in the chemical composition and carat analysis of precious metal products, and the relative purity and color analysis of gold products.

Application Case



Elements name	Test result	+/-
Au	65.5	0.2
Ag	24.430	0.17
Cu	10.013	0.085

Test result

Typical applications

- Non-destructive rapid testing and analysis of precious metals such as gold, platinum, and silver, analysis of precious metal grades
- Analysis of the content of waste recycling of precious metals
- Testing and analysis of the pawn industry, jewelry industry, and banking industry
- Jewelry testing center, precious metal recycling, and precious metal material research laboratory analysis



LANScientific Co., Ltd. analytical need solutions are designed for your business. We aim to help you improve your detection efficiency through long-term cooperation, tailor-made solutions to meet your needs, and provide fast, safe and reliable support.

Comprehensive customer support system

- Customer Service**
The customer service model of "400 hotline service + 24h online service" provides customers with fault consultation and application support services for LANScientific analytical instruments, and accepts consultations on product information, instrument training, consumables supply, event complaints, etc.
- Value-added services**
We provide users with door-to-door services, maintenance services, remote diagnosis services, upgrade services and other application services. The services are currently applicable to many users in many regions around the world to ensure your work efficiency.
- Nearby services**
In order to meet the needs of users in the application of analytical technology, we have established multiple offices and service points across the country. The offices and service points are equipped with various LANScientific's most advanced analytical instruments and analytical software, providing users with analytical consultation, demonstration analysis, training and other services, and developing new analytical technologies and analytical methods, conducting technical exchanges with users, and quickly providing the latest analytical information.

