Skyray Instruments

| Rapid | Accurate | Non-destructive |

Genius XRF
X-ray Fluorescence Spectrometer

Genius 1000 Precious Metals Analyzer
Genius 3000 RoHS Hazardous Substances Analyzer
Genius 5000 Alloy & Stainless Steel Analyzer
Genius 7000 Mineral Analyzer
Genius 9000 Heavy Metals in Soil Analyzer

Genius XRF

Handheld X-ray Fluorescence Spectrometer

Genius Handheld XRF Spectrometer features rapid non-destructive elemental identification and composition analysis with SDD Detector for precise detection of any element from Magnesium to Uranium. Performance and accuracy similar to Desktop XRF System combined with convenience and portable size factor of a Handheld XRF. Genius XRF is suitable for wide range of applications with multiple software options to choose from.

01 Precise Analysis
Thanks to Silicon Drift Detector and digital signal multi-channel processor Genius XRF reduces test time and improves accuracy

02 Convenience of Handheld XRF
Rapid on-site analysis of virtually any samples in any environment

03 Rapid & non-destructive detection
Rapid detection within 5 seconds with precise results within 10 seconds

04 Detection of light elements
Helium-charging system (optional) greatly expands measurable range of light elements

05 HD camera
High resolution camera allows precise analysis

06 Direct testing
No sample preparation necessary

07 Wide calibration range
Built-in intensify calibration method ensures Genius XRF can handle advanced calibrations for multiple applications

08 Multiple software options
Genius XRF can be configured with multiple software options including RoHS, Precious Metals, Alloy, Mineral and Heavy Metals in Soil

09 Faster data transmission
Touch screen with 640*480resolution, digital multi-channel technology, and SPI data transmission technology accelerate data transmission and improve count rate.

10 Multiple safety features
Automatic X-ray tube shut-down with no sample during testing

11 Powerful battery
Two 7800mAH Lithium Ion batteries provide up to 8 hours operation of the instrument

12 GPS function
Built-in GPS records altitude, latitude and longitude during testing

13 Wide analysis range
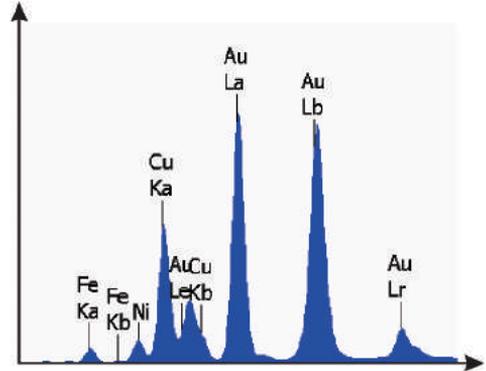Genius XRF can analyze any element from Magnesium(Mg) to Uranium (U).

Genius 1000 XRF Handheld Precious Metals Analyzer

Precious Metal Analytical Software for Au, Ag, Pt, Pd, Cu, Zn and Ni identification along

Prior to XRF Technology analyzing gold silver platinum and palladium was a long complicated task often requiring altering the sample. Ability to analyze Precious Metals within a few seconds accurately and non-destructively makes XRF Spectrometers the best instruments for Precious Metals Analysis.

Due to High cost of the Precious metals even a 1% variation in precious metal content can cost thousands to the buyer or manufacturer. Skyray Genius XRF can accurately analyze gold and other precious metals groups with impressive accuracy within seconds.

Spectral analysis

Element	Content
Au	74.492227
Cu	15.420389
Ni	6.225294
Fe	1.902314
Zn	1.535448
Ag	0.316642

Corresponding Jewelry Type

Au content is 74.495%

18k gold

Name of the precious metals jewelry	Types of jewelry	Content of metal elements	Type identifier
Au jewelry	18k gold	Au≥750‰	18K、G18K、G750、Au750
	Pure gold	Au≥990‰	Pure gold、G990、Au990
	Gold999	Au≥999‰	Gold999、G999、Au999
Ag jewelry	925 silver	Ag≥925‰	S925、Ag925
	puresilver	Ag≥990‰	S990、Ag990
Pt jewelry	Pt900	Pt≥900‰	Pt900
	Pt950	Pt≥950‰	Pt950
	Pt990	Pt≥990‰	Pt990
Pd jewelry	Pd950	Pd≥950‰	Pd950
	Pd990	Pd≥990‰	Pd990

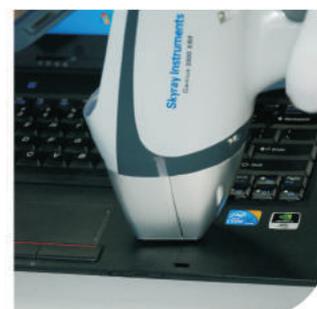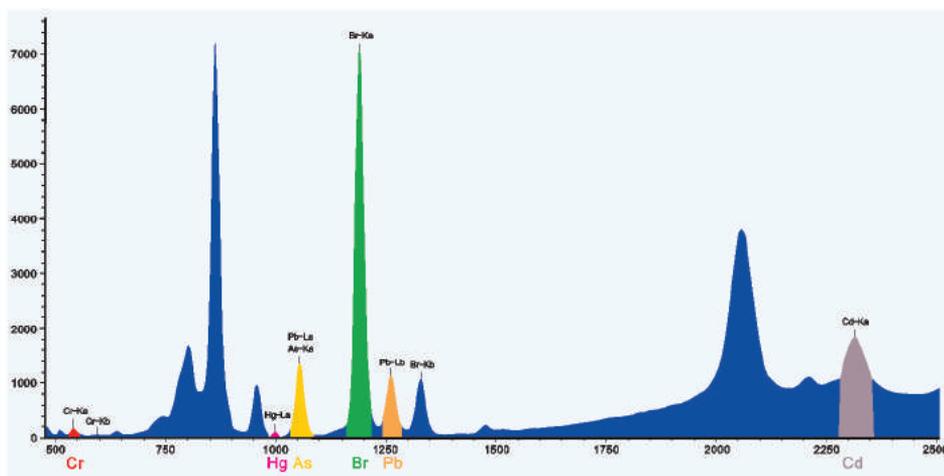| Name of the imitation jewelries	Remarks
Gold filled	gold-filled jewelry is usually composed of a layer of thin gold leaf bonded to base metals such as brass, silver, zinc and nickel. Some gold-filled pieces have the look and feel of the gold. Jewelries of this kind are usually stamped with 34kf or 18kf.
Gold plating	gold plating is to deposit a thin layer of gold with thickness of about 10 micrometer onto the surface of another base metal, most often copper, silver, zinc, nickel or their alloys, by electrolyzing means. Jewelries of this kind are usually stamped with 18KGP and 24KGP.
Pinchbeck	pinchbeck is a gold imitation material made by brass, most often plated with gold on the surface.
Rare-earth gold	rare-earth gold does not contain gold. It is an alloy composed of copper, nickel and a small amount of rare earth elements.
Ti gold	Ti gold is also an imitation jewelry and is seldom seen on the market. The base metal is usually coated with Ti to form a new substance TiN.

Genius 3000 XRF Handheld RoHS Analyzer

Genius 3000 XRF X-Ray Fluorescence Spectrometer is widely used in toy safety testing, electrical products and Quality control testing. RoHS directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. These six Hazardous materials are: Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr6+), Polybrominated biphenyls (PBB), Polybrominated diphenyl ether (PBDE). Genius 3000 XRF X-Ray Fluorescence Spectrometer is a necessary tool for quantitative & qualitative testing per RoHS Directive assuring the safety of products and safety of consumers.

Equipped with newest SDD Detector with 139eV resolution Genius 3000 XRF precisely trace hazardous elements and thanks to built-in HD Camera the operator can ensure accurate positioning and test multiple sample spots. Unlike desktop XRF Systems that are limited by the size of the sample chamber, convenient Handheld design allows to test virtually any sample- big or small.

Content Unit	ppm	EC681K					
Number	Working Curve	As	Br	Cd	Cr	Hg	Pb
1	PE	30.5568	775.628	140.4	24.194	103.15	100.973
2	PE	30.4782	770.526	140.08	24.764	100.52	99.2205
3	PE	31.5777	766.347	135.44	24.294	98.674	102.973
4	PE	29.9576	769.997	136.38	25.216	100.2	100.845
5	PE	30.3706	769.872	133.74	24.216	101.08	102.973
6	PE	30.6149	771.922	134.2	23.975	100.79	103.976
7	PE	30.391	771.009	135.32	24.5	100.99	101.487
8	PE	30.3195	768.284	136.61	25.167	99.502	99.5987
9	PE	30.6208	769.656	135.56	24.196	103.65	97.705
10	PE	30.8942	768.275	133.53	24.699	98.026	103.761
True value		29.1	770	137	23.7	98	100
Average value		30.5781	770.152	136.13	24.522	100.66	101.351
Standard Deviation S_n		0.40532	2.363	2.2759	0.4059	1.6701	1.9819
Triple S_n Value		1.21595	7.08901	6.8276	1.2178	5.0104	5.94569
Range Rppm		1.62	9.28	6.87	1.24	5.62	6.27
Relative Standard Deviation		1.33%	0.31%	1.67%	1.66%	1.66%	1.96%
Testing Deviation ε (%)		5.08%	0.02%	−0.64%	3.47%	2.71%	1.35%

Genius 5000 XRF Handheld Alloy Analyzer

Handheld Alloy & Stainless Steel Analyzer

Precise Alloy Analysis

Information about alloy grade of material is essential for professionals in many different industries in order to make important decisions on corrosion resistance, durability and material properties and ensuring the quality and safety of the final product.

Genius 5000 XRF X-Ray Fluorescence Spectrometer is an ideal instrument for fast and non-destructive alloy analysis and positive material identification(PMI). Multiple alloy analysis modes including quantitative analysis, qualitative analysis and multi-calibration methods. Fundamental parameter technology provides more analytical modes and Dynamic match function displays test results, sample numbers and matching information on the interface simultaneously.

Genius XRF comes with a complete alloy database in order to identify pure metals and different alloy grades. Accurate analysis of high & low alloy steel, stainless steel, tool steel, chromium/ molybdenum steel, nickel alloy, cobalt alloy, nickel/cobalt heat resistant alloy, titanium alloy, copper alloy , bronze, zinc alloy, tungsten alloy and others.

Example of Stainless Steel Analysis

Measurement of Main Elements in Stainless Steel (304) Testing for 10 seconds

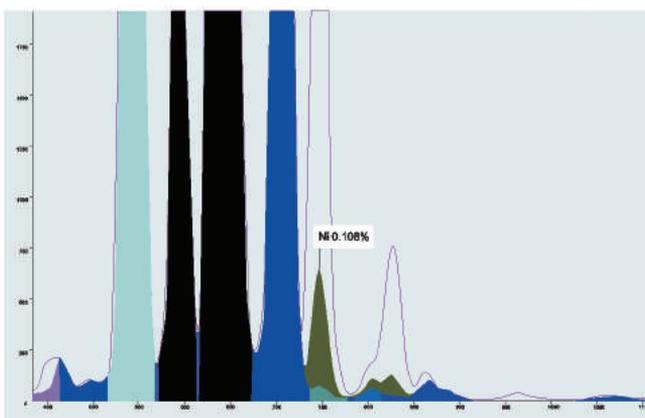|	Cr	Mn	Ni	Cu	Mo
Average value	18. 232	0. 926	8. 072	1. 236	0. 288
Standard deviation	0. 072	0. 055	0. 086	0. 043	0. 008
Relative standard deviation(%)	0. 395	5. 936	1. 067	3. 506	2. 693

Figure of Ni Content as 0.108% in Stainless Steel

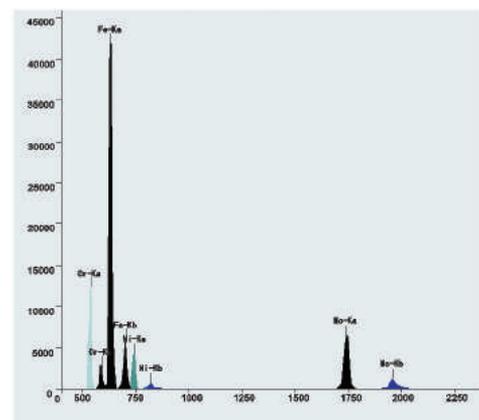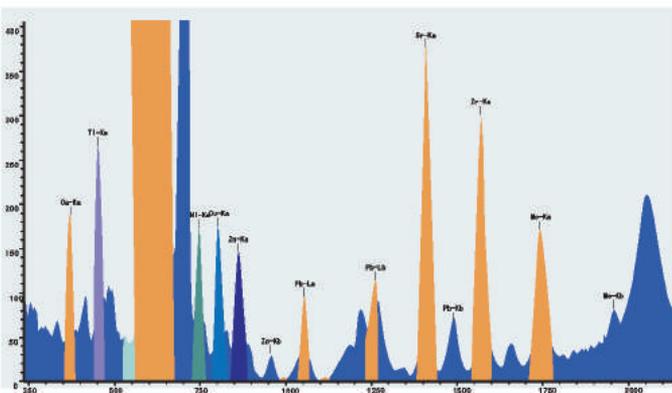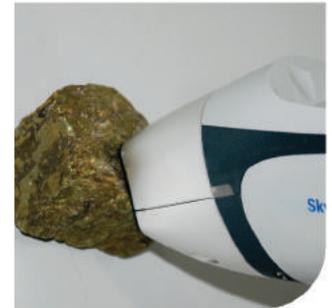Figure of Stainless Steel (316) Sample

Genius 7000 Handheld XRF

Mineral Analyzer

Rapid Mineral Ore analysis

Handheld X-Ray Fluorescence Spectrometers have revolutionized mineral and mining exploration analysis. With Genius XRF your laboratory is wherever you are. No longer is it necessary to await lab results for weeks. Skyray Instruments Genius handheld XRF is a fast and easy to use XRF analyzer for rapid categorization of ore samples in mines and mineral analysis on-site. One-key for qualitative and quantitative analysis for minerals and ores, including lighter elements Mg, Ai, Si, P, S

-Detection of Magnesium (Mg) through to Uranium (U)
-Trace metals elemental content in soil
-Quickly analyze the mine sight for key mineral ores.
-GPS mapping for identifying the location of the site

Sample	Ti	V	Mn	Fe	Co	Ni	Cu	Zn	As	Pb	Ga	Sr	Zr	Mo
07249_1	1.027	0.055	20.85	18.75	0.352	0.347	0.267	0.056	0.018	0.097	2.020	0.122	0.064	0.037
07249_2	1.052	0.053	20.85	18.76	0.351	0.350	0.249	0.056	0.018	0.096	2.063	0.122	0.064	0.037
07249_3	1.066	0.055	20.89	18.72	0.347	0.354	0.265	0.055	0.018	0.097	2.050	0.123	0.064	0.037
07249_4	1.024	0.054	20.89	18.74	0.347	0.337	0.280	0.054	0.018	0.100	2.074	0.121	0.065	0.038
07249_5	1.035	0.058	20.85	18.71	0.359	0.346	0.261	0.055	0.018	0.098	2.040	0.120	0.063	0.037
07249_6	1.032	0.053	20.86	18.76	0.350	0.344	0.273	0.055	0.018	0.096	2.062	0.122	0.064	0.037
07249_7	1.056	0.057	20.85	18.70	0.353	0.353	0.275	0.056	0.017	0.083	2.072	0.122	0.063	0.037
Avarage Value	1.042	0.055	20.862	18.734	0.351	0.347	0.267	0.055	0.018	0.095	2.054	0.122	0.064	0.037
Standard Deviation	0.0161	0.0018	0.0195	0.0244	0.0039	0.0059	0.0104	0.0007	0.0003	0.0058	0.0193	0.0010	0.0005	0.0005
RSD/%	1.55	3.35	0.09	0.13	1.12	1.71	3.88	1.29	1.89	6.05	0.94	0.80	0.79	1.45

Genius 9000 Handheld XRF

Heavy Metals in Soil Handheld Analyzer
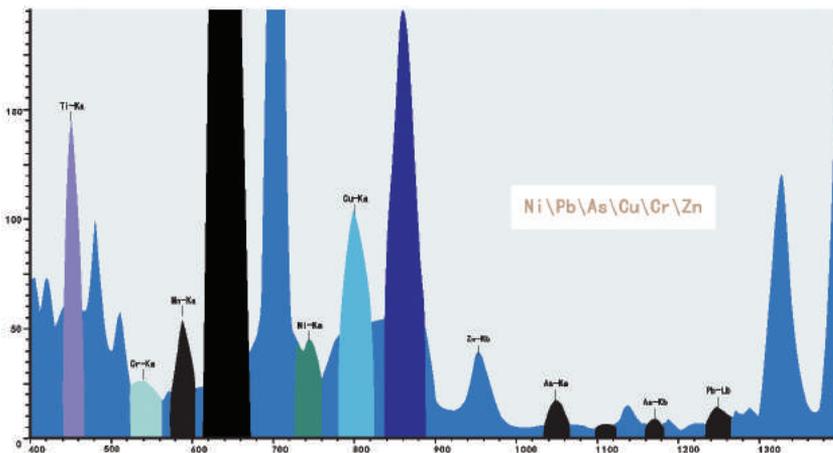
Rapid Environmental Monitoring

Genius 9000 Heavy Metals in Soils X-Ray Fluorescence Spectrometer is an ideal instrument for fast and non-destructive in-situ testing and environmental analysis in soil pollution

Heavy metals detection in soil including Zinc (Zn), Silver (Ag), Antimony (Sb), Arsenic (As), Cadmium (Cd), Chromium (Cr), Lead (Pb), Mercury (Hg), Nickel (Ni), Selenium (Se), Thallium (Tl) and Copper (Cu)
On-site tracing polluted area and identifying polluted boundary
Discovering abnormal environmental conditions
Environmental testing of solids, liquids, slag, rock, soil and mud

Sample	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	As	Se	Sb	Hg	Pb	Cd
07425_1	3811	73	52	566	2.95	10	26	25	63	6	0	1	0	26	0
07425_2	4056	72	54	541	2.95	9	28	18	72	5	0	0	0	28	0
07425_3	3724	68	45	555	2.92	11	28	25	69	8	0	1	0	20	0
07425_4	3980	51	65	602	2.94	12	29	27	70	7	0	0	0	26	0
07425_5	4036	62	51	580	2.95	10	28	29	75	5	0	0	0	27	0
07425_6	4044	75	55	564	2.95	14	25	16	64	5	0	0	0	25	0
07425_7	3794	63	58	575	2.97	14	30	26	70	5	0	0	0	24	0
Average value	3939	65	55	570	3	12	28	24	70	6	0	0	0	25	0
Standard deviation	144	9	7	21	0	2	2	5	4	1	0	0	0	3	0

2 Batteries

Bluetooth Printer
(Optional)

Car Charger

Heavy duty travel case

Table Stand
(Optional)

Technical Specifications

Measuring range	Mg to U
Processor and RAM	CUP: 667MHz RAM:256M Maximum expanded storage: 32G Standard configuration: 2G , for storage of large amounts of data
Analytical range	ppm~99.99%
Testing time	3-30 seconds
GPS、WIFI	Built-in GPS & WIFI system
Battery	Chargeable lithium battery, with capacity of 7800mAh, continuously providing 8 working hours ; Equip with wide voltage (110V-220V) general adapter
Testing object	Solid, liquid , powder
Detector	25mm^2 ,SDD
Detector resolution	Minimum resolution:139eV
Excitation source	Target: Ag High voltage: 5-40kv Tube current: 1-100 μA
Collimator and filter	Collimator kinds: 2 (4.0 mm and 2.0mm diameter) Filter types: 6 Automatic switch: YES
Video system	CMOS HD camera
Screen	Semi-transmission & semi-reflection LCD touch screen, resolution 640*480
Detection limit	Detection limit: ppm level
Safety	Self-contained password manager mode
Testing window	Φ12mm
Gas charging system	Optional Helium charging system
Operational environment	Humidity ≤90%
	Temperature: -20℃~+50℃
Size	234×306×82mm(L×H×W)
Weight	Net weight:1.6kg Battery : 0.3kg

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· Spectroscopy   · Chromatography   · Mass Spectrometry

Skyray Instruments specializes in the R&D, manufacturing and sales of analytical and measuring instruments in Spectroscopy, Chromatography and Mass Spectroscopy fields. Our Products include X-ray Fluorescence Spectrometry, Atomic Absorption Spectrometry, Gas Chromatography, Inductively Coupled Plasma Spectrometry, Mass Spectrometry and many others

Skyray has been providing customers around the world with reliable and affordable Scientific Instruments for more than 20 years