DRAWELL
Artist of Science

TO BE A WORLD-LEADING ANALYTICAL TESTING SOLUTIONS PROVIDER

• Spectroscopy • Chromatography • Mass Spectrometry

EDX2800B

EDX Spectrometer

Instrument Introduction:

With the widespread of EDX2800B over different fields, we design this type to meet the need of optimizing the product performance and improve the safety protection grade.

The reliability of the product is improved by using the high voltage source and copper tube of the new generation and the testing efficiency is improved by the adopting the high power

Testing 75 kinds of elements, 1ppm limit of detection, Repeatability 0.1%, Stability 0.1%

RoHS

Application field :

- RoHS testing

The performance is stable and reliable, achieving higher test efficiency

The automatic function of door sensor and high voltage lock gives you protection from all directions

Performance advantages:

Down-side copperSource: meet the test requirements of samples of different kinds and shapes

Collimator and filter: the Auto-switch between various collimators and filters to meet the application of different testing methods

Movable platform: sophisticated manual movable platform is convenient for locating test point

High-resolution detector: improve the analyzing accuracy

High voltage source and copper tube of the new generation: the performance is stable and reliable, achieving higher test efficiency

Streamlined man-machine design, promising your operation security

Operation indicator makes you operate comfortably

Technical specifications:

Measurable elements: S to U.

Limit of detection (LOD) reaches 1ppm.

Element content: ppm to 99.99%

Arbitrary optional analysis and identification models

Independent matrix effect correction models

Multi-variable non-linear regression procedure

Ambient temperature: 15℃ to 30℃

Power supply: AC 220V±5V, AC purified stabilized voltage power supply.

Energy resolution: 160±5eV

Sample chamber size: 439mm×300mm×50mm

Instrument size: 550mm×410mm×320mm

Instrument weight: 45kg

Standard configurations:

Movable sample platform

Signal-to-Noise Enhancer (SNE)

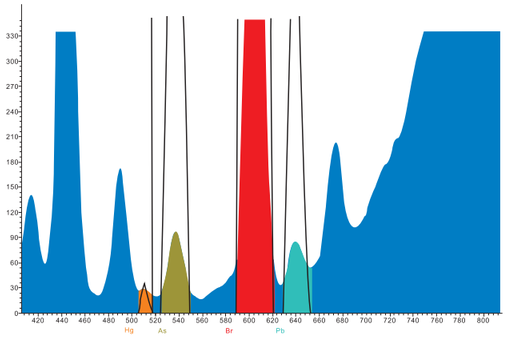
Electric-cooling Si-PIN detector

Signal detection electronic circuit

High and low voltage power

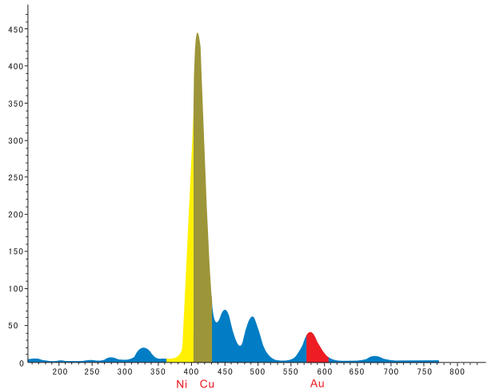
Test cases:

RoHS Testing



Test Results Spectrum

Plating Thickness Testing



Test Results Spectrum

What are RoHS and WEEE Directives?

The European Union has adopted Directive 2002/95/EC on the restriction of certain hazardous substances (RoHS) and Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) with their publication in the Official Journal of the European Union on February 13, 2003. WEEE comes into effect on August 13, 2005 and RoHS requires the substitution of various heavy metals (lead, mercury, cadmium and hexavalent chromium) and brominated flame retardants (polybrominated biphenyls [PBB] or polybrominated diphenyl ethers [PBDE]) in new electrical and electronic equipment put on the market from July 1, 2006.

Testing standard of substances restricted by RoHS Directive

Hazardous substances	Standards (mg/kg)
Cd	100
Pb	1000
Hg	1000
Cr^{6+}	1000
PBBs	1000
PBDEs	1000

Restricted substances and their typical uses

Pb	
Solders	
Paints	Pigments and driers
Glass materials	Pb is allowed in fluorescent lamp
Ceramic materials	Pb is allowed in certain electronic ceramic materials
Iron, aluminum and copper materials	A certain amount of Pb is allowed
Plastics	PVC stabilizer and pigments
Batteries	Pb is allowed in acidic batteries for vehicles

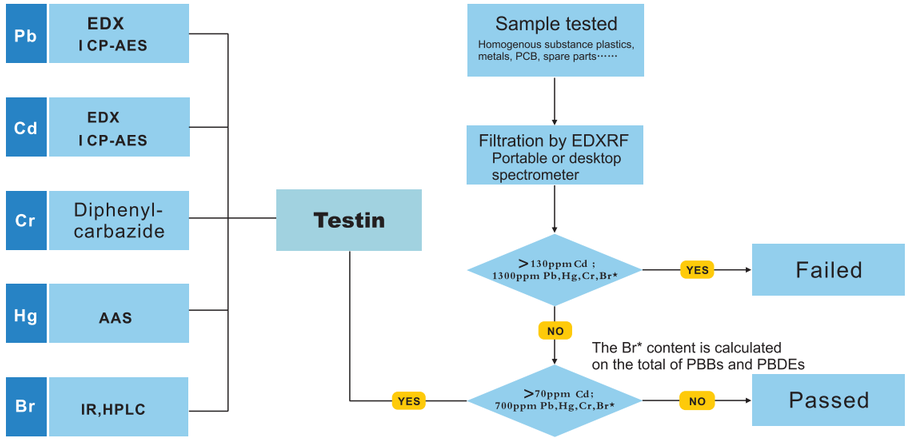
Cd	
Plastics	Stabilizer and pigments
Solders	Seldom used
Ceramics	Seldom used
Connectors	Relays and switches
Batteries	Cd is allowed in Ni-Cd batteries
Semiconductors	Optical sensors and solar cell panels

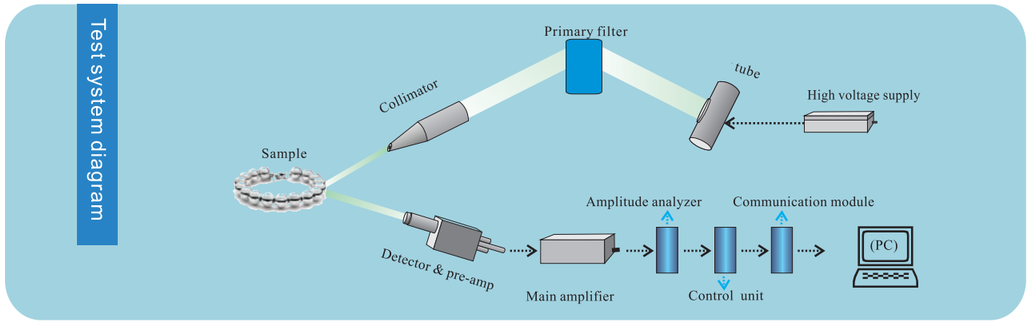
Hg	
Batteries	Prohibited (see battery directive)
Connectors	Relays and sensitive switches
Fluorescent lamps	A certain amount of Hg is allowed

Cr^{6+}	
Passivation layers	Commonly used for naked metal surfaces to enhance adhesion of plating layers
Anti-corrosive plating layers	Painting and plating layers
Chrome plating layers	Plating layer of chromium metal is not under control
Plasticizer	Commonly used to plastics plating process but not final products

PBBs & PBDEs	
Plastics	Brominated flame retardants

The analytical method of filtration for XRF to test RoHS substances





PERIODIC TABLE OF EIEMENTS

Per.	IA												IIIA	IVA	VA	VIA	VIIA	0
1	1 H 1.008	IIA																2 He 4.008
2	3 Li 6.94 0.052	4 Be 9.012 0.110											5 B 10.81 0.185	6 C 12.01 0.282	7 N 14.01 0.392	8 O 15.99 0.523	9 F 18.99 0.677	10Ne 20.17 0.861
3	11Na 22.99 1.041	12Mg 24.31 1.254	III B	IV B	V B	VI B	VII B	VIII			I B	II B	13 Al 26.99 1.487	14 Si 28.09 1.740 1.838	15 P 30.97 2.015 2.142	16 S 32.06 2.307 2.468	17Cl 35.45 2.622 2.817	18 Ar 39.94 2.957 3.191
4	19 K 39.1 3.312 3.589	20 Ca 40.08 3.690 4.012 0.341 0.344	21 Sc 44.96 4.088 4.459 0.395 0.399	22 Ti 47.90 4.508 4.931 0.452 0.458	23 V 60.94 4.949 5.427 0.51 0.519	24 Cr 51.99 5.411 5.947 0.571 0.581	25Mn 54.94 5.895 6.492 0.636 0.647	26 Fe 55.84 6.400 7.059 0.704 0.717	27 Co 58.93 6.925 7.649 0.775 0.790	28 Ni 58.7 7.472 8.265 0.849 0.866	29 Cu 63.54 8.041 8.907 0.928 0.948	30 Zn 65.38 8.631 9.572 1.009 1.032	31 Ga 69.72 9.243 10.26 1.096 1.122	32 Ge 72.5 9.876 10.98 1.186 1.216	33 As 74.92 10.53 11.73 1.282 1.317	34 Se 78.9 11.21 12.50 1.379 1.419	35Br 79.90 11.91 13.29 1.48 1.526	36 Kr 83.8 12.63 14.12 1.587 1.638
5	37 Rb 85.47 13.38 14.97 1.694 1.752	38 Sr 87.82 14.14 15.85 1.806 1.872	39 Y 88.91 14.93 16.75 1.922 1.996	40 Zr 91.22 15.75 17.69 2.042 2.124 2.302 1.792	41 Nb 92.91 16.58 18.65 2.166 2.257 2.462 1.902	42Mo 95.94 17.44 19.63 2.293 2.395 2.623 2.015	43 Tc #(99) 18.33 20.65 2.424 2.538 2.792 2.122	44 Ru 101.0 19.24 21.69 2.558 2.683 2.964 2.252	45 Rh 102.9 20.17 22.76 2.696 2.834 3.144 2.376	46 Pd 106.4 21.12 23.86 2.838 2.990 3.328 2.503	47 Ag 107.9 22.10 24.99 2.984 3.151 3.519 2.633	48 Cd 112.4 23.11 26.14 3.133 3.316 3.716 2.767	49 In 114.8 24.14 27.38 3.287 3.487 3.92 2.904	50 Sn 118.6 25.19 28.60 3.444 3.662 4.131 3.044	51 Sb 121.7 26.27 29.85 3.605 3.843 4.347 3.188	52 Te 127.6 27.38 31.13 3.769 4.029 4.570 3.335	53 I 126.9 28.51 32.44 3.937 4.220 4.800 3.484	54 Xe 131.3 29.67 33.78 4.111 4.422 5.036 3.636
6	55 Cs 137.3 30.85 35.15 4.286 4.620 5.280 3.794	56 Ba 137.3 32.07 36.55 4.467 4.828 5.531 3.953	Ln	72 Hf 178.4 55.38 63.56 7.898 9.021 10.51 6.958	73 Ta 180.9 57.11 65.56 8.145 9.341 10.81 7.172	74 W 183.8 58.86 67.59 8.396 9.670 11.28 7.386	75 Re 186.2 60.66 69.66 8.651 10.01 11.68 7.602	76 Os 190.2 62.48 71.78 8.910 10.35 12.09 7.821	77 Ir 192.2 64.35 73.93 9.173 10.71 12.51 8.040	78 Pt 195.0 66.25 76.13 9.441 11.07 12.94 8.267	79 Au 197.0 68.19 78.37 9.711 11.44 13.38 8.493	80 Hg 200.5 70.16 80.66 9.987 11.82 13.82 8.720	81 Ti 204.3 72.18 82.99 10.27 12.21 14.28 8.952	82 Pb 207.2 74.23 85.36 10.55 12.61 14.76 9.183	83 Bi 208.9 76.32 87.77 10.84 13.02 15.24 9.419	84 Po #(209) 78.46 90.24 11.13 13.44 15.74 9.662	85 At #(210) 80.64 92.75 11.42 13.87 16.25	86 Rn #(222) 82.86 95.32 11.72 14.32 16.77
7	87 Fr # (223) 82.12 97.93 12.03 14.77	88 Ra # 226.0 87.44 100.6 12.34 15.23 17.8 10.60	An															

Alkali Metals | Non-Metal | Transitional element
Halogen | Lanthanoids | Actinides
Alkaline earth | Rare gases | Main group metal

Mark 1：#Radioactive Elements *Man Made Elements
2：All the Numbers are ordered one by one in this way, Atomic Number
Element Symbol, Atomic Weight, ϰ, Kβ, Lα, Lβ, Lγ, Le

Ln	57 La 138.9 33.30 37.99 4.651 5.043 5.789 4.124	58 Ce 140.1 34.57 39.45 4.840 5.262 6.052 4.287	59 Pr 140.9 35.86 40.95 5.034 5.489 6.322 4.452	60 Nd 144.2 37.19 42.48 5.230 5.722 6.602 4.632	61 Pm #(147) 38.54 44.05 5.431 5.956 6.891 4.816	62Sm 150.4 39.91 45.65 5.636 6.206 7.180 4.994	63 Eu 152.0 41.32 47.28 5.846 6.456 7.478 5.176	64 Gd 157.2 42.76 48.95 6.059 6.714 7.778 5.361	65 Tb 158.9 44.23 50.65 6.275 6.979 8.104 5.546	66 Dy 162.5 45.73 52.38 6.495 7.249 8.418 5.742	67 Ho 164.9 47.26 54.16 6.720 7.528 8.748 5.942	68 Er 167.2 48.82 55.96 6.948 7.810 9.089 6.152	69Tm 168.9 50.41 57.81 7.181 8.103 9.424 6.341	70Yb 173.0 52.04 59.69 7.414 8.401 9.779 6.544	71 Lu 175.0 53.59 61.61 7.654 8.708 10.14 6.752
An	89 Ac # (227) 89.79 103.3 12.65 15.71 18.41	90 Th # (232) 92.19 106.1 12.97 16.2 18.98 11.12	91 Pa # 231.0 94.64 108.9 13.29 16.7 19.55 11.36	92 U # 238.0 97.14 111.8 13.61 17.22 20.16 11.62	93 Np # (237) 99.69 114.7 13.95 17.74 20.77 11.89	94 Pu # (244) 102.3 117.7 14.28 18.28 21.40 12.12	95Am # * (243) 104.9 120.8 14.62 18.83 22.04 12.38	96Cm # * (247) 107.7 123.9 14.96 19.39 22.69	97 Bk # * (247) 110.5 127.1 15.31 19.97 23.37	98 Cf # * (251) 113.3 130.4 15.66 20.56 24.06	99 Es # * (252) 116.2 133.7 16.02 21.17 24.76	100Fm # * (257) 119.2 137.2 16.38 21.79 25.47			