

# Energy Dispersion X-ray Fluorescence Spectrometer (DW-NP-5010)

## Working principle

The original X-ray produced by X-ray tube and high voltage is irradiated on the sample after being properly filtered by the optical filter. The characteristic X-ray (called X-ray fluorescence) of the elements contained in the sample is stimulated. X-ray fluorescence spectra were obtained by using X-ray detectors with high energy resolution. Different elements formed different spectral peaks on the spectra. The strength of the spectral peak is directly proportional to the content of elements in the sample. The energy spectrum detected by the detector is analyzed by the computer. The types of elements contained in the sample are qualitatively analyzed by the position and shape of the spectral peak.

## Application

DW-NP-5010A energy dispersive X-ray fluorescence spectrometer (XRF) is widely used in environmental protection, geology, mineral, metallurgy, cement, electronics, petrochemical, polymer, food, medicine and high-tech materials and other fields, playing an important role in product research and development, production process monitoring and quality management. In addition, the instrument can be used in archaeology, building materials, RoHS directive and other industries. It is the enterprise quality control ideal choice.

## Introduction

DW-NP-5010A energy dispersive XRF has very wide application. It can do qualitative, quantitative and no sample analysis. Such as block sample, powder or liquid samples, from the 4th element in the periodic table beryllium (Be) to the 92nd element uranium (U), almost all of the elements can be accurately analyzed. The analytical concentration range can be from 0.1 PPM to 100%, and even up to 100% of the element concentration can be directly measured without dilution. XRF analysis method has the advantages of simple sample preparation, wide determination range of elements, high determination accuracy, good reproducibility, fast measurement speed (30s-900s), no environmental pollution and no destruction of samples.

## Main component and technical parameters

### 1. Si(PIN) or SDD detector

The resolution of detector is one of the main indexes to evaluate the performance of energy dispersive XRF spectrometer.

Resolution < 145eV (The lower the resolution, the higher the sensitivity.)

Counting rate > 1000/S

Crystal area > 15mm<sup>2</sup>

Beryllium window thickness = 0.025mm

Detector power < 1.2W

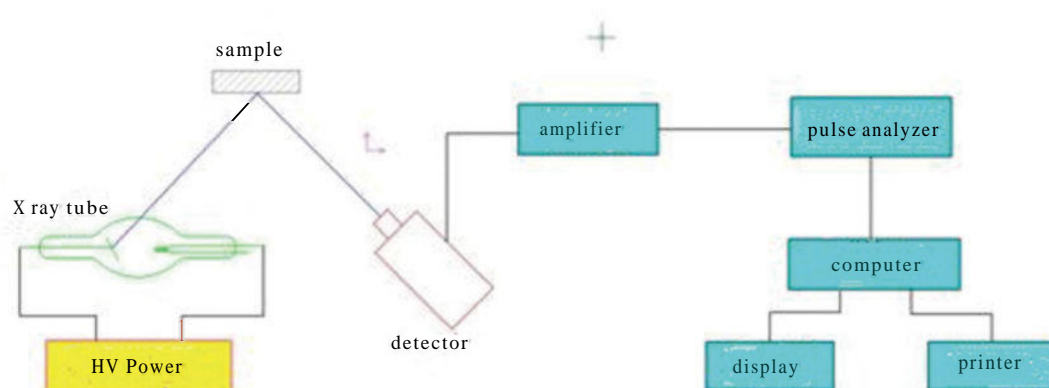
### 2. Multi-channel analyzer

Number of channels: 2048 channels

### 3 Power controller

System power control: +5 VDC at 250 mA (1.2 W)

Constant cooling control: 400 VDC



(XRF Spectrometer Structure Diagram)

#### 4. X ray tube

The X-ray tube, specially treated with embedded lead inside is shielded in full range, leaving only the side window for the x ray outlet. The canned insulating oil is used for high voltage insulation and cooling, 0.005 inch Beryllium window, rated consumption power 50W, rated power 50kV. Designed service life >15000h.

#### 5. High voltage generator

Input: 85~265VAC, 47~63Hz, Power factor correction.

1kV~5kV comply to UL85~250VAC input standard

Voltage variation: 0.01% of output voltage from no load to full load

Current variation: 0~rated power, 0.01% of output current

Ripple: Peak - peak of output voltage 0.25%

Temperature variation: voltage or current setting, 0.01%/°C

Stability: 0.05%/8h after warming-up for half an hour

#### 6. Automatic filter conversion system

Filters are automatically selected and converted (filter function: The energy spectrum component of the excitation line can be improved to suppress the strong X-ray fluorescence of high content components and improve the measurement accuracy of the elements to be measured.)

#### 7. Radiation shielded system

- Newly designed and specially treated X-ray tube with low-radiation
- Fully enclosed lead plate double shield design
- Automatic filtering device for lead plate
- X - ray interrupters in case of sample unexpected cover opening
- Delay testing and X-ray warning system

#### 8. The detection limit of harmful elements Cd, Pb, Cr, Hg and Br is restricted according to ROHS instruction

Detection limit (Cd, Pb, Cr, Hg, Br): 2ppm

#### 9. Powerful analysis software workstation

One-touch operation software, simple and easy to use, user does not need professional knowledge.

Ergonomic human-machine interface

Operators do not need to set various test parameters, powerful customized report function..

Test data is automatically stored with historical query function

The most advanced qualitative and quantitative analysis method.

Dozens of elements can be analyzed simultaneously.



## Specifications

Model		DW-NP-5010A
Analysis principle		Energy dispersive X-ray fluorescence analysis
Element measuring range		Any element from Na(11)-U(92)
Min. measuring limit		Cd/Hg/Br/Cr/Pb $\leq$ 2 ppm
Sample shape		Arbitrary size, any irregular shape
Sample type		Plastic/metal/film/powder/liquid etc
X ray tube	Target material	Mo
	Tube voltage	5—50KV
	Tube current	1—1000 $\mu$ A
Sample exposure diameter		2, 5, 8mm
Detector		Si-PIN or SDD detector, high speed pulse height analysis system
High voltage generator		Special HV generator for X fluorescence
ADC		2048 channels
Filter		6 filters are automatically selected and converted.
Sample observation		200 $\times$ color CCDcamera
Analysis software		Patented software products, free upgrade for life
Analysis method		Theoretical a coefficient method,basic parameter method, empirical coefficient method
Analysis time		30-900seconds, adjustable
Operating system software		WINDOWS XP
Dataprocessing system	Host	PC business model
	CPU	$\geq$ 2.8G
	Memory	$\geq$ 2g
	CD-ROM	8xDVD
	Hard disk	$\geq$ 500G
	Display	22'' or 24'' LCD display
Working environment		Temperature 10—35C, humidity 30—70%RH