

PORTABLE XRD ANALYZER - X-RAY DIFFRACTOMETER - SHINE SOIL EDITION



The Portable XRD Analyzer – X-ray Diffractometer – SHINE Soil Edition is specifically engineered for the identification and analysis of clay mineral content. This device swiftly identifies clay mineral types and their respective percentages based on crystal structures. Even small-grained minerals can be accurately determined, making it the primary method for clay mineral identification. Its advantages include simple sample preparation, rapid analysis, and high measurement accuracy.

The basic principle of X-ray diffraction involves the interaction between a monochromatic X-ray beam and a crystal structure. When the beam strikes the crystal, its atoms arrange into a cell with distances comparable to the wavelength of the incident X-rays. This results in mutual interference of X-rays scattered by different atomic positions, leading to stronger effects in specific directions and the formation of diffraction lines with varying spatial distribution and intensity. These patterns closely correlate with the crystal's structure.

Clay minerals serve as the primary medium for charged particle interaction within soil. Research indicates the existence of over ten types of clay minerals, including chlorite, kaolinite, illite, montmorillonite, and illite/montmorillonite. The distribution and content of these minerals vary significantly across different regions, with substantial variation in both horizontal and vertical reservoirs.

APPLICATIONS

Portable XRD Analyzer - Green development of agriculture

Green development of agriculture

Portable XRD Analyzer - Soil pollution control

Soil pollution control

Portable XRD Analyzer - Environmental indicator study

Environmental indicator study

FEATURES

Portable

The Portable XRD Analyzer – X-ray Diffractometer – SHINE Soil Edition features an all-in-one waterproof and dustproof design, devoid of any mechanical moving parts. It is lightweight, compact, and convenient to carry, facilitating seamless scientific research in both laboratory and field settings.

Integration

The integration of XRD and XRF technologies allows for the simultaneous collection of X-ray photon data from both methods during each test. This comprehensive approach provides detailed information on material composition, phase, and structure, thereby enhancing the accuracy of test results.

Simplicity

The Portable XRD Analyzer – X-ray Diffractometer – SHINE Soil Edition operates with one-key operation, requiring no correction and featuring automatic detection. Users need not pay extra attention to the high-pressure system or water

circulation cooling system, as the instrument does not include additional components for high pressure or water circulation cooling.

Data transmission

The Portable XRD Analyzer – X-ray Diffractometer – SHINE Soil Edition achieves high-speed connections with a laptop computer through USB, Bluetooth, and WIFI, enabling real-time control and phase analysis of the SHINE instrument.

Two Dimensional X-Ray Diffractometer

The Portable XRD Analyzer – X-ray Diffractometer – SHINE Soil Edition is equipped with a charge-coupled device (CCD) detector, capable of capturing slices of the diffraction ring. This feature assists users in determining if the sample has been prepared correctly, including particle statistics and preferred grain orientation. It further helps users confirm the accuracy and representativeness of the obtained qualitative and quantitative data.

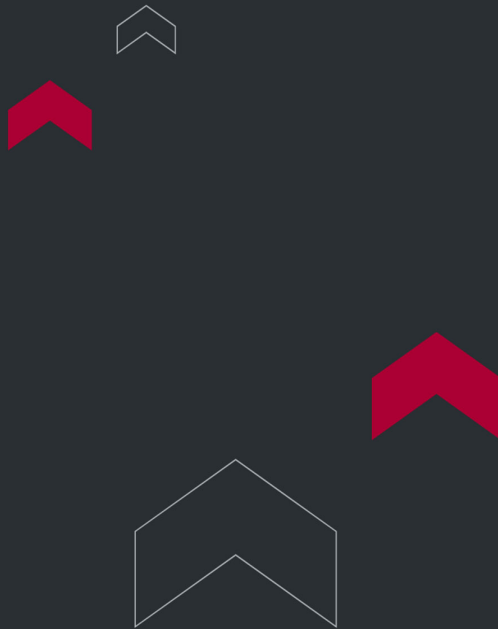
Flexibility

According to the specific applications requested by users, we offer customers two different anode targets: Cu and Co targets.

TECHNICAL SPECIFICATIONS

XRD resolution	0.2°@2θ FWHM
Scope of XRD	5-55°2θ

The detector	2000 X 256 pixel, 2d, level 3 Peltier refrigeration CCD
X-ray tube target	Cluster microfocal spot X-ray tube, Cu or Co, Cr, Fe, Ni, Mo, Ag, W target (optional according to test sample)
X-ray tube voltage	Maximum 50kV, 0-50kV adjustable
X ray tube power	Maximum 40W, 0-40W adjustable
XRF energy resolution	127eV@8keV
XRF detection range	Mg—U
Sample particle size	Sample particle <150um (100 mesh sieve)
Cooling Method	Water Cooling
Sample weight	about 20mg
Working temperature	-10°C-35°C
Weight	15KG
The power supply	Lithium ion battery or power adapter
Size	50×40×18.8cm□ L×W×H□
CrystalX analysis software language	English and other languages



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