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SHINE

XRD ANALYZER
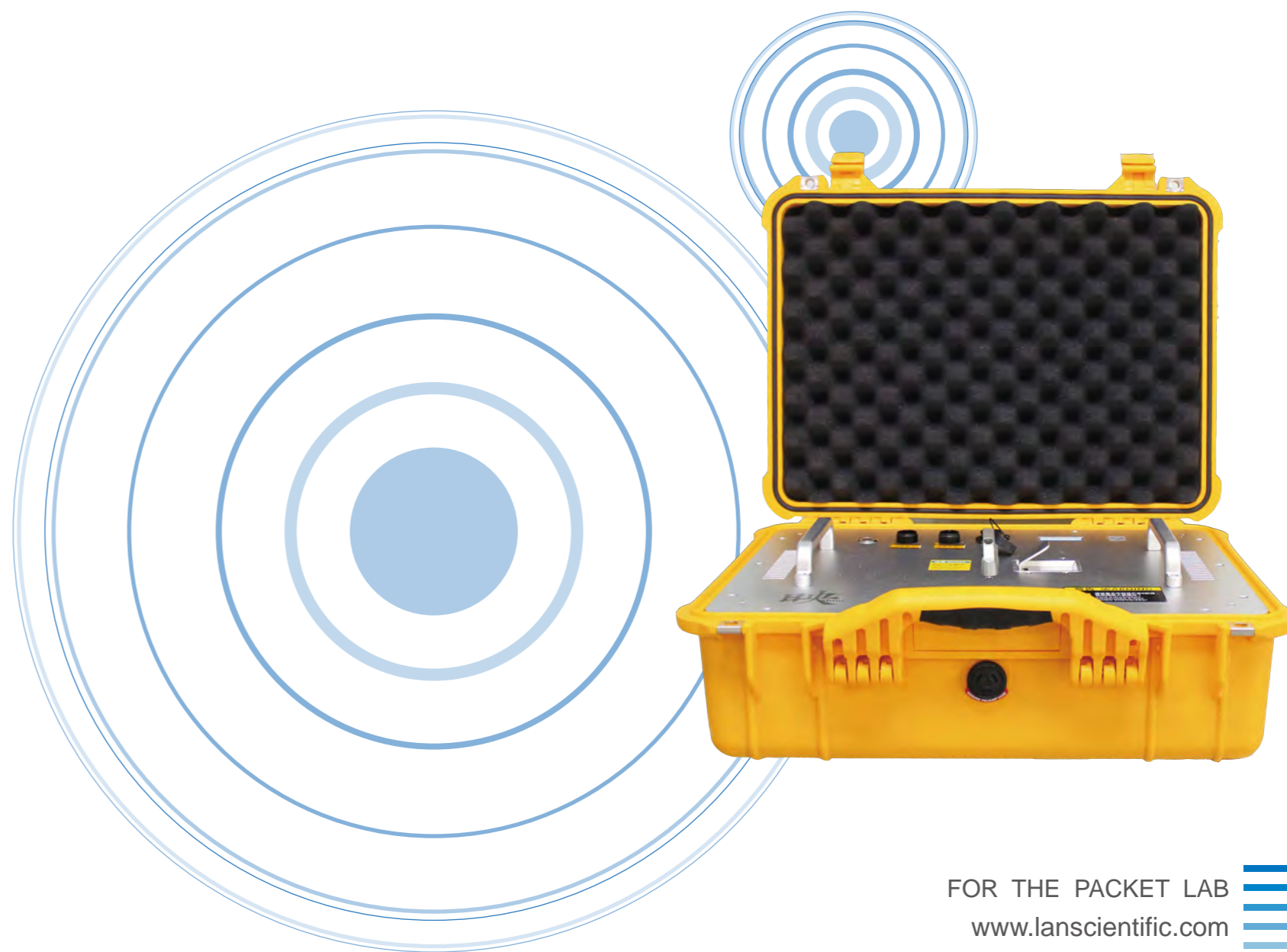
FOR THE PACKET LAB

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PRODUCT INTRODUCTION

SHINE XRD Analyzer is a portable X-ray diffractometer independently developed by LANScientific Co., LTD., which combines XRD, XRF and computer software technologies. The samples by X-ray diffraction instrument, analysis of the diffraction pattern, material with material composition, internal information such as atomic or molecular structure or form (material ingredient, the secondary ingredients or trace elements of the crystal phase ID information), it has a simple sample preparation, no pollution, quick, high measurement precision, can get a lot of information about the integrity of the crystal, It is the main method to study the phase and crystal structure of matter.

Schematic Diagram

Collimator

The X-ray Beam

The CCD Detector

Microfocusing X-ray Tube
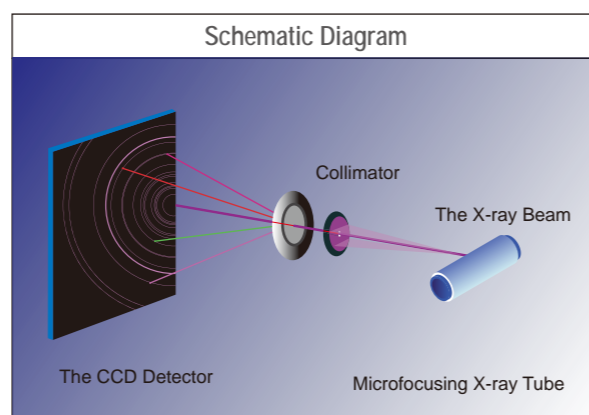
XRD PRINCIPLE

When a beam of monochromatic X ray incident to crystal, because the crystal is made up of atomic rules are arranged into a cell, the rules of the distance between the atoms and the incident X-ray wavelength with the same order of magnitude, so by the different atomic scattering X-ray mutual interference, stronger effects in some special directions X ray diffraction, the diffraction lines in the spatial distribution of location and intensity, is closely related to the crystal structure, That's the basic principle of X-ray diffraction.

Fundamentals of XRD - Bragg's Law

d

θ

$d\sin\theta$
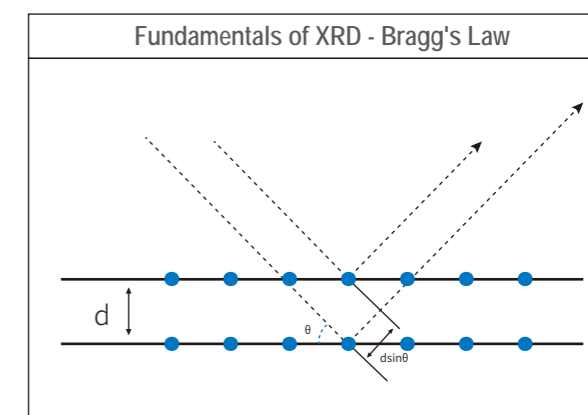
"New teammates" bring new breakthroughs in field testing

Designed for field testing, it provides crystal phase ID and quantitative information automatically and in real time

Professional grade IP 67 protected portable enclosure

The whole instrument is about A3 size, the shell is both a suitcase, waterproof and dustproof box all-in-one machine design, can be shockproof, anti-fall, anti-corrosion, high temperature resistance, easy to cope with the harsh environment in the wild.

15 kg portable mainframe

The instrument weighs about 15 kg, no mechanical moving parts, light and compact, easy to carry, easy to operate, can be free for laboratory/field scientific research.

Only 20 mg of sample is required for preparation

A single analysis only needs about 20 mg of sample to obtain high quality test results. Sample preparation can be completed in 3 minutes (crushing, filtering and sampling) without making, pressing and scraping equal.

Four hours of battery life

Built-in battery can support up to 4 hours of continuous work, more conducive to field work.

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HIGH-PERFORMANCE
HARDWARE CONFIGURATION

The X-ray tube

The instrument is equipped with a cluster micro-focal spot X-ray tube, which can ensure good focusing of X-ray. The standard configuration of the target material is Cu or Co, and Cr, Fe, Ni, Mo, Ag, W, etc., can be selected according to the detection sample situation. The cluster micro-focal spot X-ray tube ensures the good focusing of X-ray.

X ray collimator

X-ray collimator adopts pinhole collimation system, which replaces the optical calibration component of traditional large desktop computer.

The detector

The detector adopts two-dimensional detector, which can effectively identify diffraction beam and fluorescent beam, and is extremely sensitive to energy and position. It can carry out XRD and XRF analysis synchronously.

The cooling system

Using three-level Peltier electronic refrigeration and special two-way ventilation heat dissipation device, can effectively ensure the normal working temperature of the detector.

Sample vibration system

The sample vibration system replaces the traditional goniometer. During the sample detection process, both the X-ray beam and the detector are stationary, while the detected sample vibrates at high speed through the magnetic interlocking device to ensure the randomness of sample particles and obtain higher quality diffraction information.
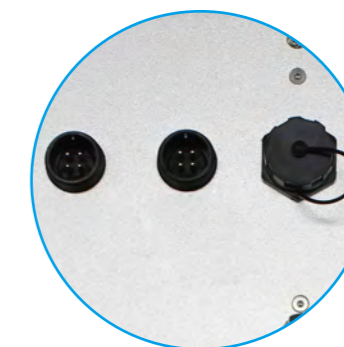
Waterproof and anti-electric shock sockets are used for safety

High quality yarn spraying oxidation paint surface process

equipped with a digital power display to directly view the remaining battery capacity

INTELLIGENT ANALYSIS SOFTWARE

In addition to adopting high-quality and high-performance hardware configuration, SHINE is also equipped with highly intelligent and efficient CrystalX application analysis software. CrystalX phase analysis system combines XRD control system with phase analysis system perfectly, which can simplify image smoothing, peak search, fine repair and other work, and easily achieve one-key results.

▶ **The user interface**

All results can be viewed directly in one interface. Calibrate and analyze information to speed up workflow.

▶ **Data transfer function**

The instrument realizes high-speed connection with laptop computer through USB, Bluetooth, WiFi, real-time control of the instrument and phase analysis.
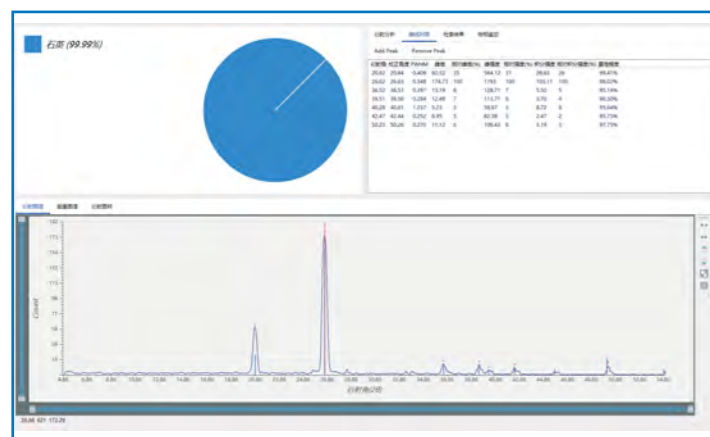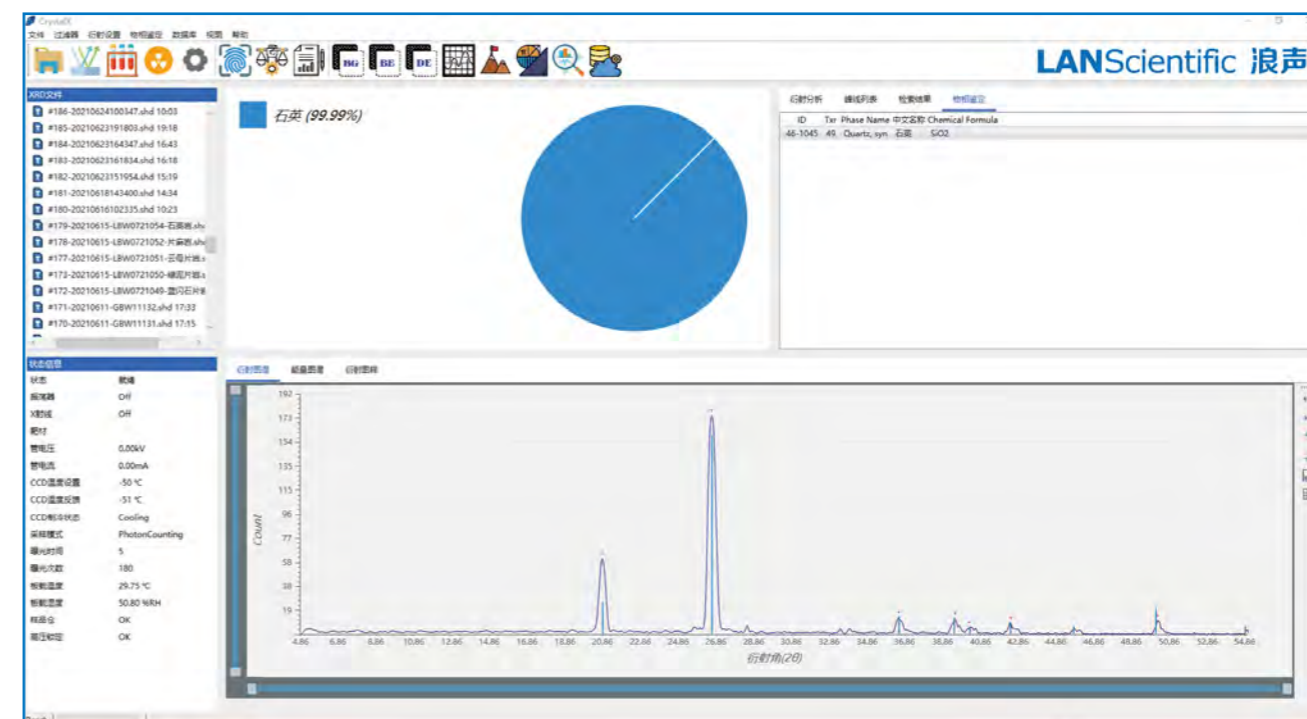
▶ **Customize report data**

The detection data can be output in Excel and PDF format, and users can create custom reports.

▶ **Database service**

The software is equipped with a comprehensive, customizable control list database to help users quickly and accurately screen samples, and can also build their own database and instrument management according to actual needs.
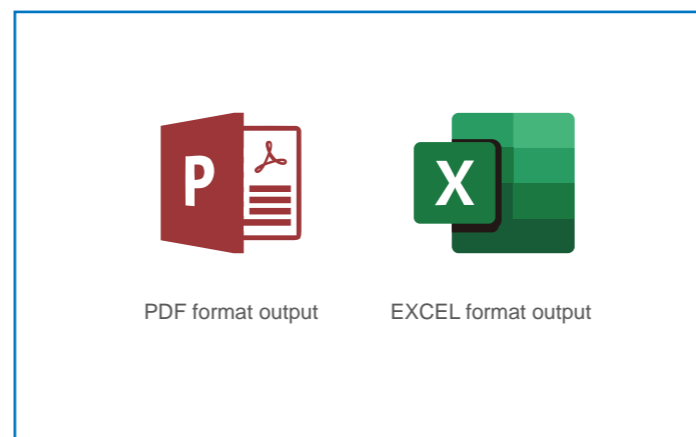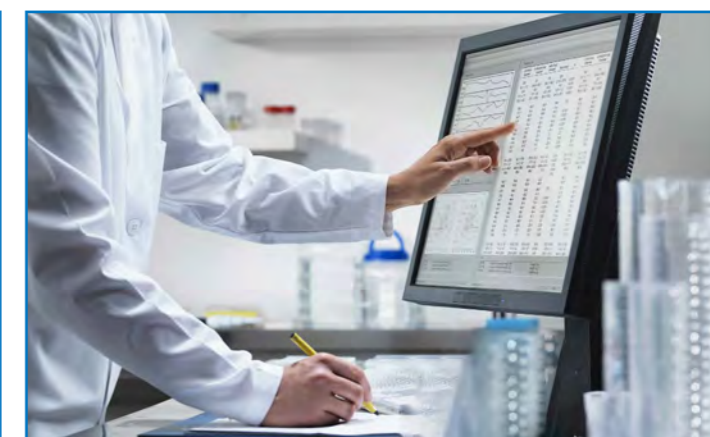
CRYSTALX ANALYSIS SOFTWARE

User Interface

Data transfer function

PDF format output   EXCEL format output

Custom report data

Database service

SPECIFICATION

500mm

400mm

Item	Parameter
XRD DPI	0.2°@2θ FWHM
XRD Range	5-55°2θ
Detector	2000 X 256 pixel, 2D, level 3 Pelter 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 50W, adjustable 0-50W
XRF energy resolution	127eV@8keV
XRF test range	Mg-U
Sample particle size	Sample particle <150um (100 mesh sieve)
Sample quantity	About 20mg
Operating temperature	-10 °C ～ 35 °C
Weight	15Kg
Power supply	Li ion battery or power adapter
Size	500× 400×188mm
CrystalX Analysis software language	Chinese, English and other languages

APPLICATION IN GEOLOGY AND MINERAL FIELD

▶ SHINE XRD Analyzer can provide real-time quantitative mineralogical information for geologist, metallurgist and other users in the geological and mineral field, and provide users with information of major and minor mineral components quickly.

The following figure shows the spectral map of some samples analyzed by SHINE, through which we can compare the differences of components among samples:
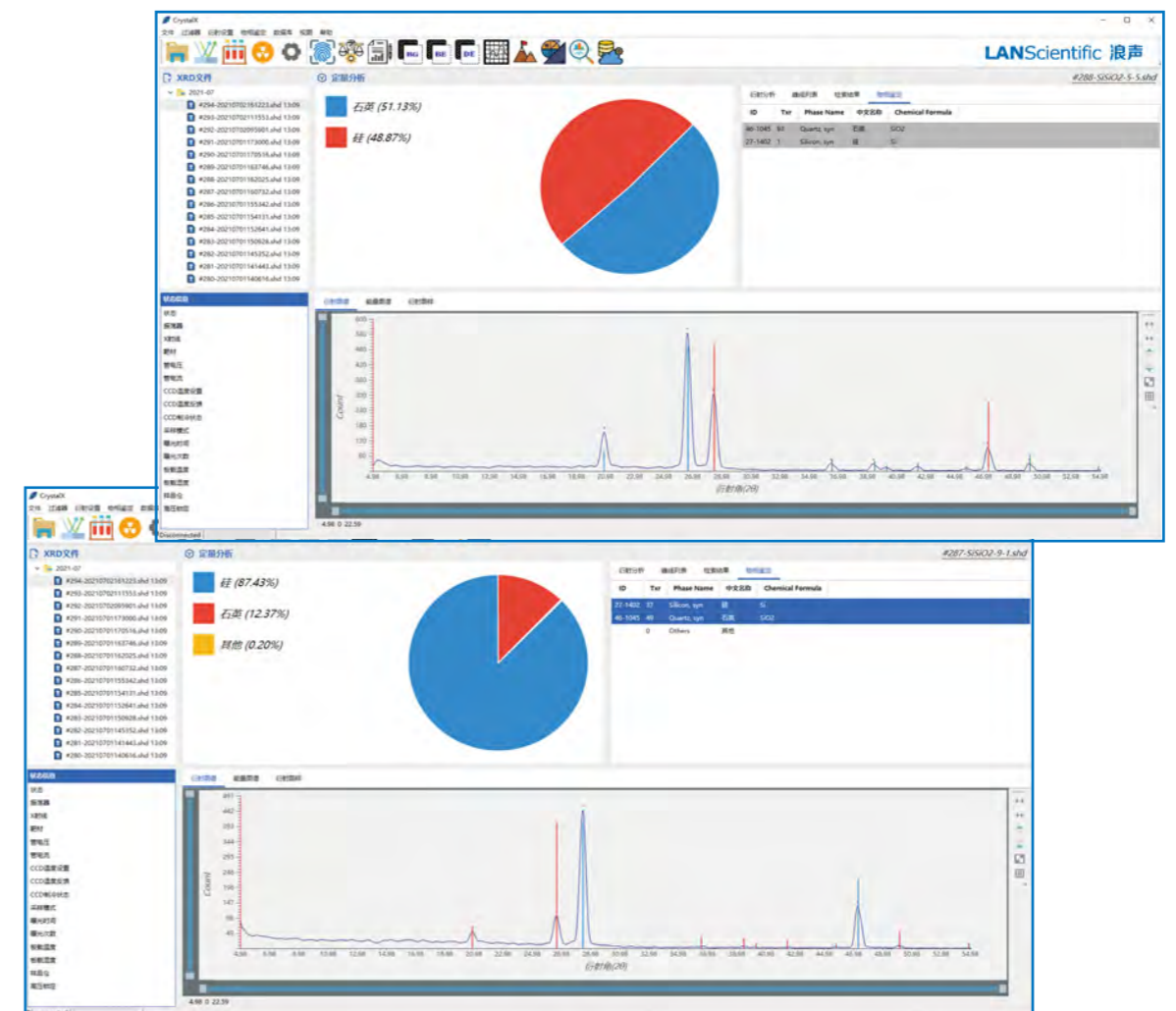
APPLICATIONS

▶ Ores and minerals

◎ Rapid analysis of iron-rich ores, such as quartz, hematite, goethite, magnetite;

◎ The calcite (CaCO3) in coal was quantitatively analyzed.

◎ The crystal phase identification and semi-quantitative analysis of potassium carbonate,potassium salt, rock salt, anhydrous potassiummagnesium alum and potassium magnesium alum were carried out.

◎ Quantitative analysis of common ores mixed with limestone, such as: A-quartz, asbestos ore, calcite, dolomite;

◎ It is used to reanalyze tailings to determine plant performance or to evaluate past projects.

▶ Petroleum chemical industry

◎ Mineral identification and quantification of shale cuttings in the field to obtain quick feedback in geosteering and horizontal drilling, simplifying "vein strike tracing" of specific mineral zones;

◎ Identify and quantify corroded materials in pipelines. XRF measurements can also be performed simultaneously to quickly identify the elemental composition of materials.

▶ Drugs, explosives/hazards

◎ Quick identification of explosives and suspected explosives on site;

◎ Identification and quantification of suspicious hazardous materials, molten materials and catalysts;

◎ Used for drug, contraband identification, forensic identification, customs verification and other law enforcement work.

▶ Pharmaceutical industry and others

◎ Rapid identification of counterfeit drugs;

◎ Rapid identification of raw and auxiliary materials;

◎ Rapid and nondestructive fingerprint analysis of pharmaceutical preparations and precursor drugs;

◎ Detect the presence and content of active and inactive ingredients, foreign or substitute ingredients in drugs.

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North America

Europe

Asia

Beijing
Zhengzhou
Linyi
Suzhou
Ningbo
Wenzhou
Shenzhen

Africa

South America

Oceania

ABOUT US

LANScientific Co., Ltd. is a provincial high-tech enterprise specializing in r&d, production and sales of high-end analytical instruments. It is a scientific and technological entity integrating product design, development, manufacturing, sales and service.

Company main product is applied to the analysis above Na to the fields of U element or compound ingredients, involved in industries including aerospace, petrochemical, environmental protection, metal materials, mineral exploration, such as the instrument consists of X-ray fluorescence analyzer (Xrf), on-line monitoring X-ray spectrometer, X-ray diffraction, Raman spectrometer, four series, It can be used in multiple scenarios.

SERVICES

LANScientific is committed to providing customers with the most optimized solutions. We aim to help customers improve testing efficiency by cooperating with customers to provide solutions tailored to meet their needs and provide fast, safe and reliable support.

In order to meet the needs of customers in the application of analysis technology,LANScientific has established a comprehensive customer support system to provide customers with analysis consulting, demonstration analysis, training, etc., and constantly develop new analysis technology, analysis methods, technical exchanges with users, quickly provide cost-effective, high-quality solutions.
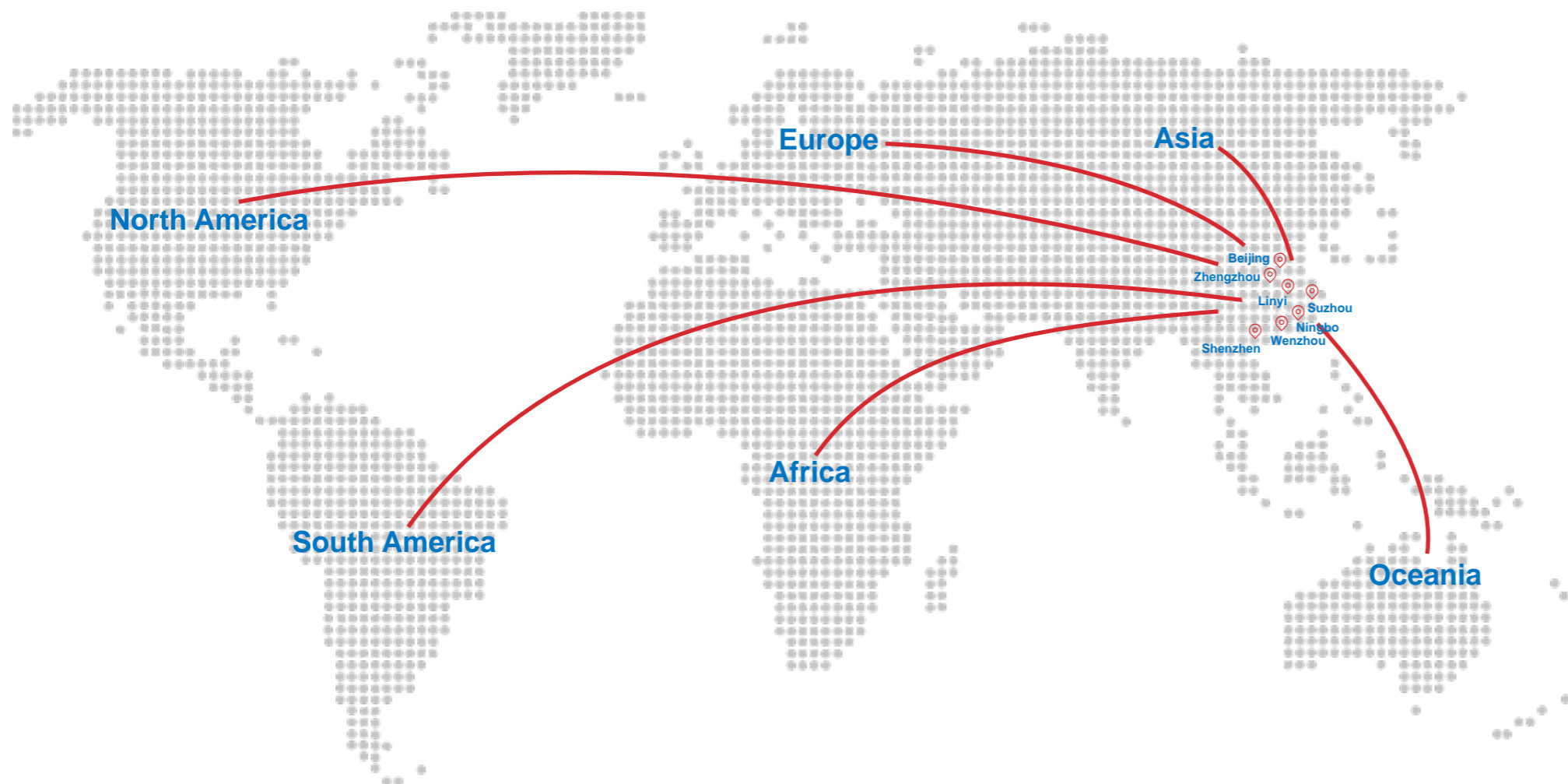
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LANScientific products have been exported to the United States, Dubai, Russia, Brazil, India and other more than 30 countries and regions, agents all over the world. In the future, we will continue to expand business territory with better products and more intimate service, so that domestic instruments to the world!