

Portable Diffractometer **RIKOR-2** (XRD/XRF DT) Of X-ray Measuring Complex RIKOR

This small-size desktop multi-functional instrument is designed for phase and spectral express analysis of powder samples

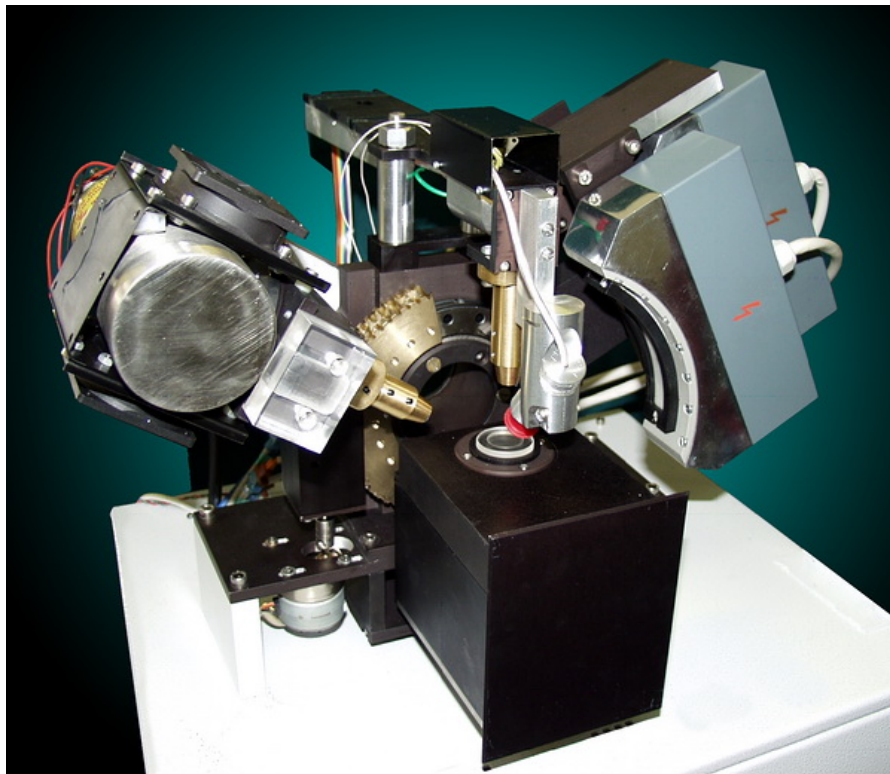
The instrument is certified with the Federal Agency for Technical Regulation & Metrology (Certificate RU.C.38.002.A №23217) as measuring tool type, registered with the State Registry of Measuring Tools under №31025-06, and allowed for application in the Russian Federation.



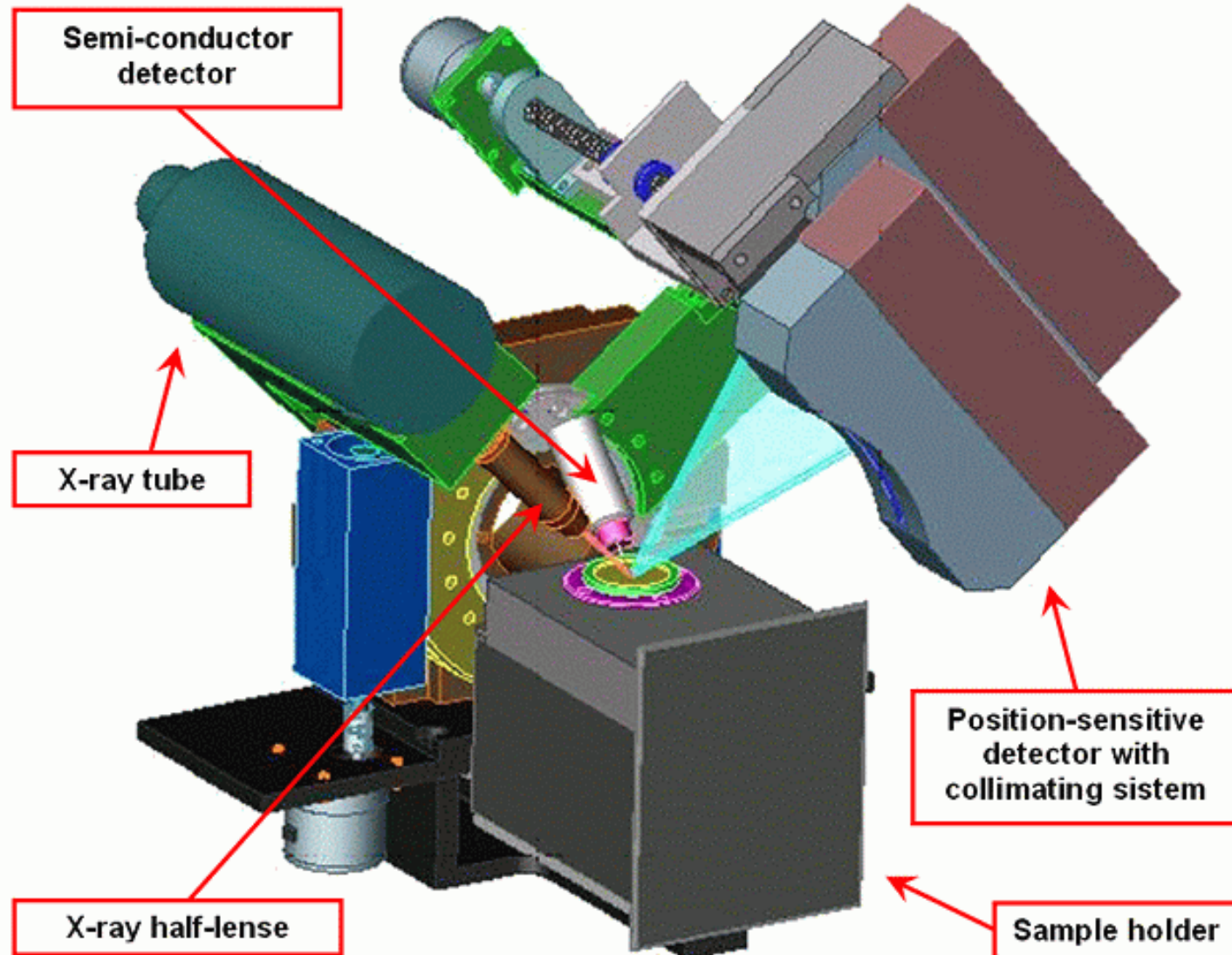
RIKOR-2 (XRD/XRF DT) is a new generation of desktop x-ray diffractometers developed by **IRO** specialists. The main advantage compared to other companies manufacturing similar equipments is that **we not only manufacture diffractometers but use them for control checks in various industries.** This ensures continuous feedback from customers, thus, allowing fast making modifications in the instruments' design with regard to customers' needs.

- **RIKOR-2** (XRD/XRF DT) is a new generation of portable desktop x-ray diffractometers.
- It implements the Debye-Sherrer scheme based on parallel x-ray beam.
- It utilized Kumakhov polycapillary optics to create parallel primary beam and collimate the reflected diffracted beam.
- The combination of diffraction and spectrometry channels ideally suits the purposes of on-line monitoring of technological processes.

Application of Kumakhov polycapillary lenses and half-lenses enables high-efficient transportation of x-ray radiation with higher density both for parallel and focused x-ray beams as required for the geometric shape (a line, a dot) without diaphragms. Kumakhov polycapillary half-lens allows creating a spatially collimated x-ray beam with divergence of $\sim 10^{-3}$ rad., which significantly improves the accuracy of determining the position of the diffraction line maximum. Fast replacement of tube within 2-3 minutes is provided for.



- Automatic insertion into the measurement zone of the spectrometry channel to determine the element composition of sample
- Patented position-sensitive detectors
- High-speed, stability, wide angular range of simultaneous registration
- Application of two position-sensitive detectors to improve resolution
- Automatic switch of detector
- Application of a polycapillary collimation system in front of detector for the resolution purposes
- Automatic setting to a required angle of measurement
- Low level of degradation in the course of operation
- Sealed detectors don't need application of a special gas unit
- Simple replacement of samples
- Horizontal placement of sample
- Time of analysis – 200 sec.

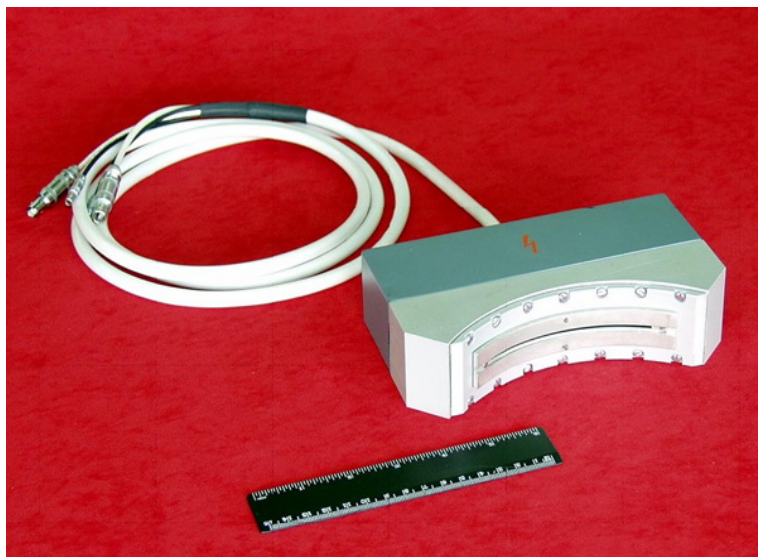


X-ray tube of up to 50W power (does not need water cooling) is equipped with Kumahov polycapillary optics used as a collimator.

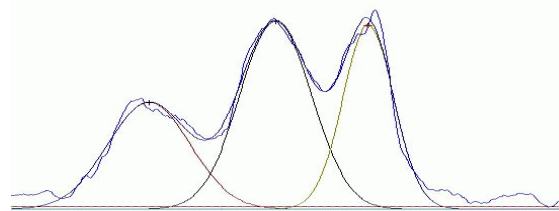
Low-power radiation and strict collimation of the primary beam ensure radiation safety.

Instrument dimensions (380x600x600) and a special enclosure allow placing it close to the process line, in unequipped non-special quarters.

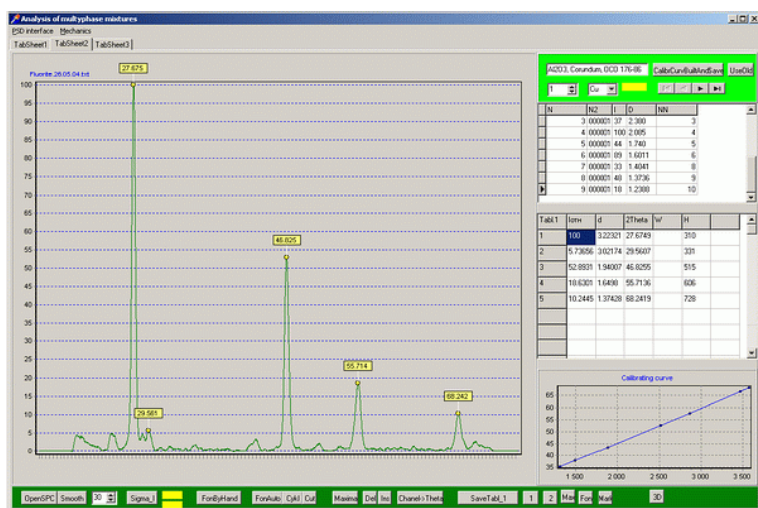
Instrument operation does not require elaborated sample preparation.



The instrument is equipped with a **high-efficacy diffracted x-rays registration unit for registering x-ray diffraction radiation**, consisting of a position-sensitive detector and a polycapillary collimating system. Application of a polycapillary filtering unit improves resolution of adjacent peaks, provides filtration of K_{β} line, improves the peak -to-noise ratio, raises accuracy of determining the angular position of the diffraction peak.



Experimental diffractogram of quartz triplex obtained using a linear spatially-coordinate detector



Software provides for fast and easy obtaining data both on the structure and chemical composition of the sample under analysis.

Simple and pictorial interface is supported by Windows 98/2000/Me/XP environment.



BASIC TECHNICAL CHARACTERISTICS

General

Angular interval of simultaneous registration	55° (12°) according to 2 θ
Angular interval according to 2 θ	5 –160°
Angular resolution	0.01° per channel
Mean square deviation in measuring line angular positions	0.005°
Detector	Gas-filled, position-sensitive, proportional, curved (R=114mm) or linear
Goniometer radius	114.8mm and 180mm
Energy dispersion detector – the sensitive surface area	7mm ²
Energy resolution	230eV
Power consumption	220V, 50-60Hz,125W

X-ray tube

Power	50 W
Anode	Cu (Mo,Fe- options)
Focus size	120x80micron
Colling	air

Parameters

Total instrument weight	25 kg
Overall dimensions	380x600x600 mm



AREAS OF APPLICATION

- Inspection control of production of complex compounds (ferro piezoelectrics, ferrites)
- Pharmaceutical industry
- Chemical industry
- Metallurgy
- Mining industry
- Geology
- Inspection control of thin coatings and films
- Education
- Manufacture of ceramics
- Cement industry
- Expertise of pieces of art and antique

CONTACTS

Institute for Roentgen Optics

Chasovaja st. 28, build 64/A in npp Radij, Moscow 125315, Russia

Tel: (499) 151-49-56

Fax: (499) 151-29-92

E-mail: iroptic@list.ru

optics@yandex.ru

Web: www.xrayoptic.ru