LINEV SYSTEMS®
United for Innovation

2026

Accessories for the

TELLUS

X-Ray Diffractometer

linevsystems.com

Analytical instruments

LINEV Systems has established itself as a trailblazer in the field of benchtop science products. With a dedication to innovation, accuracy, and excellence, LINEV Systems is transforming the industry of science instruments by providing professionals, such as researchers and scientists, with cutting-edge solutions for their laboratory requirements.

LINEV Systems stands out for its commitment to creating cutting-edge benchtop analytical equipment in an environment where science is becoming more demanding and fast-paced.

TELLUS

All-in-One Solution

X-RAY DIFFRACTOMETER

Multi-function solution with exceptional materials research & analysis speed, reliability and reproducibility, a desktop powder X-ray diffractometer that meets the highest requirements for this class of instruments and even exceeds expectations.

Table of Content

Other Solutions

EPR
Spectrometer

Pioneering
X-ray NDT

Full-body Forensic
X-ray Imaging

01.HOLDERS AND CUVETTES

LOT #C1001

Cuvette for direct powder filling

Features

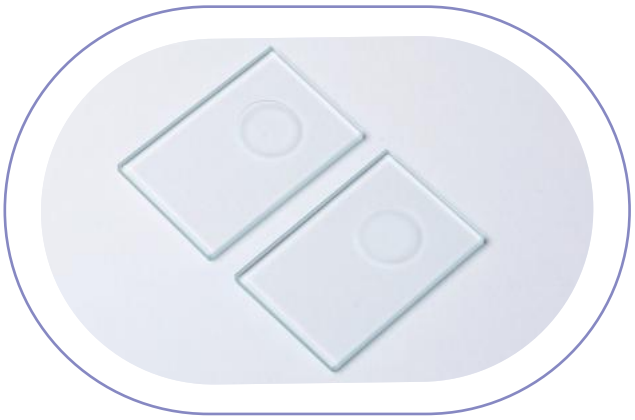
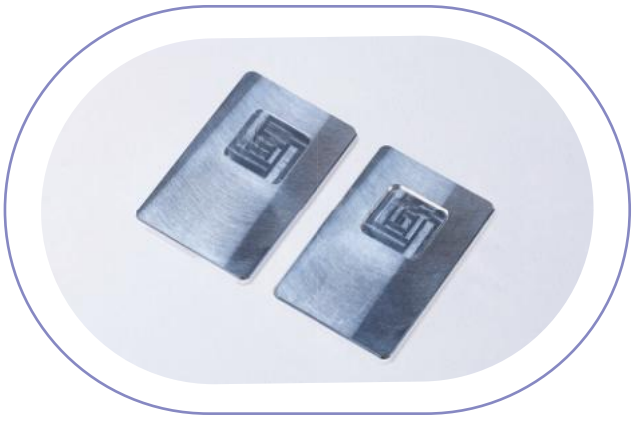
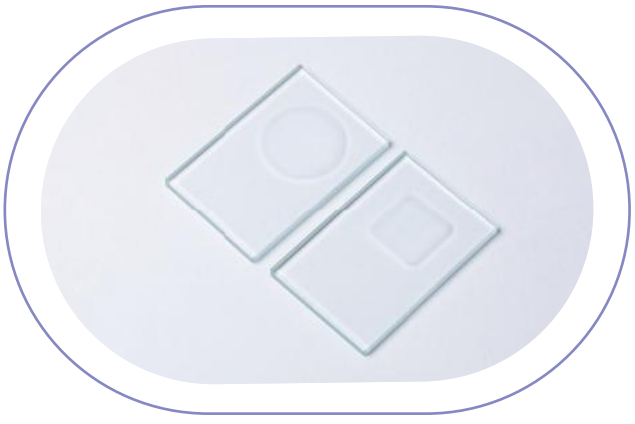
- recess shape: rectangular or circular;
- material: aluminum, steel, glass, PMMA;
- pit dimensions: 20x20 mm or ø 26 mm;
- depth: 0,2 to 1,0 mm.

The cuvette is designed for direct filling of powdered samples, with the option of pre-leveling. The volume of the test sample can be adjusted based on the desired depth. The standard version is crafted from aluminum, but alternative materials can be chosen to suit specific customer requirements or the nature of the test samples

Curvette depth

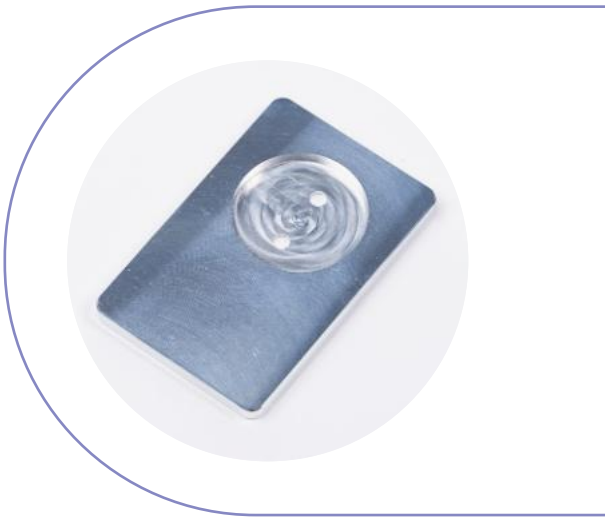
Rectangular shape	0,2 mm	0,5 mm	1,0 mm
Aluminum	Item No. 00.05.001-00	Item No. 00.05.001-01	Item No. 00.05.001-02
PMMA	Item No. 00.05.002-00	Item No. 00.05.002-01	Item No. 00.05.002-02
Glass	Item No. 00.05.005-00	Item No. 00.05.005-01	Item No. 00.05.005-02
Others		On request	

Circular shape	0,2 mm	0,5 mm	1,0 mm
Aluminum	Item No. 00.05.008-00	Item No. 00.05.008-01	Item No. 00.05.008-02
PMMA	Item No. 00.05.006-00	Item No. 00.05.006-01	Item No. 00.05.006-02
Glass	Item No. 00.05.007-00	Item No. 00.05.007-01	Item No. 00.05.007-02
Others		On request	

LOT #C1002

Reference sample cuvette



Features

- rectangular shape;
- material: aluminum, steel, glass, PMMA;
- pit dimensions: ø 26 mm, depth: 2,2 mm;
- possibility to install low-background cuvettes.

The cuvette is designed for positioning Standard reference materials or cuvettes without background interference.

While aluminum is the standard material, alternative options are available to accommodate specific customer requirements or the characteristics of the test samples, such as chemical compatibility or mechanical strength.

Glass	Item No. 00.05.003
Aluminium	Item No. 00.05.004
Steel	Item No. 00.05.009
PMMA	Item No. 00.05.111
Others	On request

LOT #C1003

Powder backfill cuvette

Features

- rectangular shape;
- material: aluminum, steel, glass, PMMA;
- pit dimensions: 20x20 mm.

The cuvette is specifically designed for backfilling and compacting powdered materials within the pit. It ensures uniform distribution and consistent density of the sample during preparation. The standard version is constructed from aluminum, offering durability and lightweight properties.

However, alternative materials can be provided to meet specific customer requirements or to accommodate the unique characteristics of the test samples, such as chemical compatibility or mechanical strength.

LOT #C1004

Powder backfill cuvette (with cover)

Features

- rectangular shape;
- material: aluminum, steel, glass, PMMA;
- pit dimensions: 20x20 mm;
- removable bottom to protect against spillage

The cuvette is intended for backfilling and pressing powders in the pit. It provides for additional sample fixation for protection against spillage. Aluminum is used as standard, other materials can be selected depending on the customer's needs and the type of test samples.

LOT #C1005

Cuvette with adjustable loading depth

Features

- rectangular shape;
- material: aluminum, steel, PMMA;
- recess dimensions: ø 26 mm;
- adjustable loading depth with dimensions of 0 to 4 mm

The cuvette is designed for versatile use, allowing both direct and backfilling of powdered samples, with the added capability to adjust the loading depth for precise sample preparation. It accommodates standard samples and offers multiple options for installing low-background cuvettes, ensuring flexibility for various analytical applications.

The standard construction material is aluminum, chosen for its lightweight and durable properties.

However, alternative materials can be selected to meet specific customer requirements, such as enhanced chemical resistance, thermal stability, or mechanical strength, depending on the nature of the test samples and intended use. Additionally, the design ensures ease of handling and compatibility with a wide range of laboratory equipment.

LOT #C1006

Sealed cuvette

Features

- rectangular or circular recess;
- material: aluminum, steel, PMMA;
- recess dimensions: ø 26 mm or 20x20 mm with a depth of 0,2 to 2,0 mm;
- possibility to install low-background cuvettes;
- sealed cuvettes with a protective screen made of X-ray transparent material.

The cuvette is specifically designed for direct filling of powdered samples, ensuring efficient and precise sample preparation. It supports the installation of standard samples as well as various background-free cuvettes, making it suitable for a wide range of analytical applications.

To maintain sample integrity, a sealed cap with a protective screen made of X-ray-transparent material can be installed, providing a hermetic seal and preventing contamination or sample loss.

Additionally, an inert loading option is available for handling sensitive or reactive materials, ensuring optimal conditions for analysis. The standard material is aluminum, but alternative materials can be selected to meet specific customer needs, such as enhanced chemical resistance, thermal stability, or compatibility with particular sample types. This flexibility makes the cuvette adaptable to diverse testing environments and requirements.

LOT #C1007

Cuvettes for sample rotator and automated sample changer

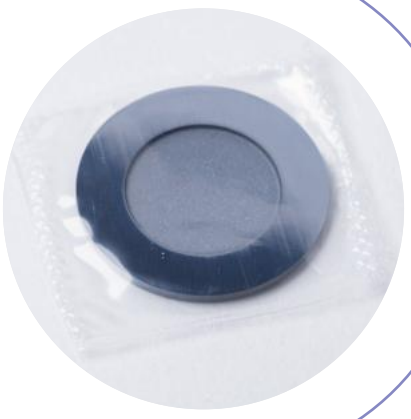
Features

- circular cuvette with a diameter of 30 mm and a height of 4 mm;
- material: aluminum, steel, glass, PMMA;
- recess dimensions: ø 26 mm with a depth of 0,2-2,0 mm;
- possibility to install background-free cuvettes.

The cuvette is specifically designed for direct filling of powdered samples, ensuring efficient and precise sample preparation for analytical measurements. It is compatible with both sample rotators and automated sample changers, enabling seamless integration into high-throughput workflows and reducing manual handling. The design ensures uniform sample distribution and stability during rotation or automated positioning, which is critical for accurate and reproducible results. Aluminum is used as standard, other material can be selected according to the customer's needs and the type of test samples.

Curvette depth

Circular shape	0,2 mm	0,5 mm	1,0 mm	2,0 mm
Aluminum	Item No. 12.00.002	Item No. 12.00.002-01	Item No. 12.00.002-02	Item. 12.00.002-03
PMMA	Item No. 12.00.003	Item No. 12.00.003-01	Item No. 12.00.003-02	Item. 12.00.003-03
Glass	Item No. 12.00.004	Item No. 12.00.004-01	Item No. 12.00.004-02	Item. 12.00.004-03
Others		On request		



LOT #C1008

Background-free cuvette

Features

- circular shape, 25 mm diameter, 1 mm thickness;
- material: silicon monocrystal;
- 2 makes: with and without recess.

The cuvette is designed for high-precision measurements of small sample quantities. It features background-free diffraction plates crafted from a silicon monocrystal with a specific orientation, ensuring minimal interference.

This makes it ideal for powder X-ray diffractometry applications where reducing background noise and unwanted peaks is critical, particularly within the 20 to 120 degrees 2θ range. Its design ensures accurate and reliable results, making it a valuable tool for advanced analytical studies.

Background-free cuvette with a flat bottom	Item No. 126.33.075
Background-free cuvette with a recess of 12 mm diameter and 0,5 mm depth	Item No. 126.33.073
Others	On request

LOT #H1001

Holder for bulk samples

Features

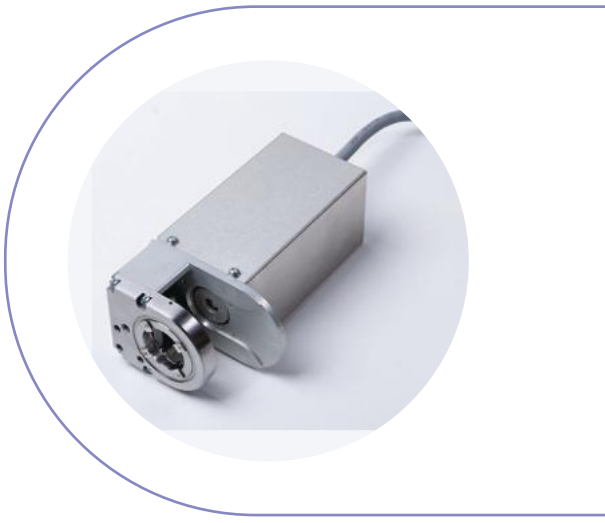
- installed sample dimensions: up to 30/50/150 mm;
- simple installation.

Our precision holder, specifically designed for bulk samples, is an essential accessory that guarantees secure fixation and precise leveling of your samples. It ensures perfect alignment with the TELLUS diffractometer plane, delivering accurate and reliable results with every measurement. The holder is constructed from durable materials to withstand rigorous use, while its ergonomic design allows for easy handling and quick sample changes.

Additionally, it is compatible with a wide range of sample sizes and shapes, making it a versatile tool for various analytical applications. Whether you're conducting routine tests or advanced research, this holder provides the stability and precision needed for optimal performance.

LOT #H1002

Rotating sample stage



Features

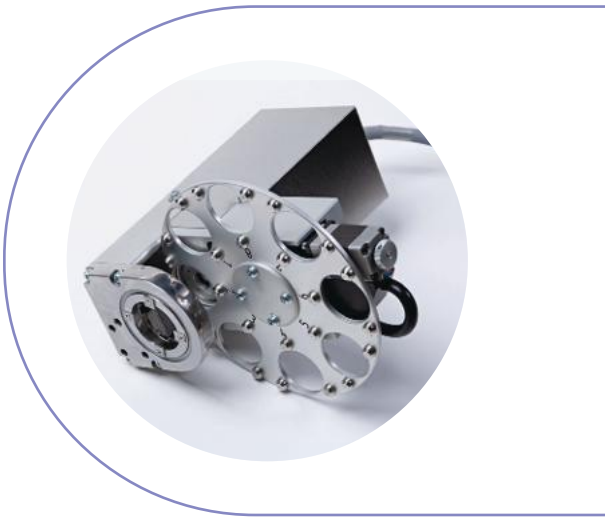
- installed cuvette dimensions: ø 30 mm;
- automatic control;
- sample rotation speed: up to 100 rpm;
- simple installation.

Enhance your X-ray diffraction measurements with our advanced electromechanical unit, specifically designed to securely hold samples in round cuvettes and rotate them at a controlled, user-defined speed during analysis.

By rotating powdered samples, this unit effectively minimizes texture effects, leading to more accurate and reliable XRD results. The optimal rotation speed is set at one full revolution per scan step of the diffractometer, ensuring consistent and precise data collection.

LOT #H1003

Automated sample changer



Features

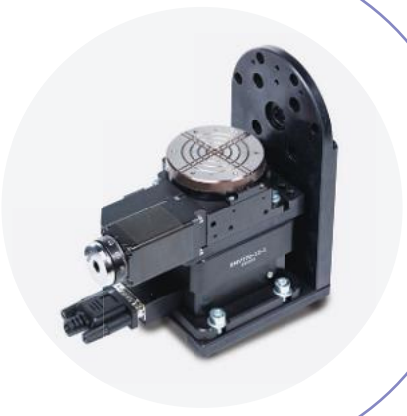
- 8 cuvettes installed in automatic changer;
- changer type: revolving;
- installed cuvette dimensions: ø 30 mm;
- automatic control;
- sample rotation speed: 10 to 100 rpm

Boost productivity and simplify your experimental workflows with our advanced automated sample changer, capable of handling up to 8 different samples simultaneously. This innovative system allows you to perform a series of measurements on multiple samples quickly and efficiently, significantly reducing downtime and increasing throughput.

The TellusCon control software provides seamless project customization for each sample, enabling tailored experimental conditions and automated data collection, which minimizes operator involvement and ensures consistent, high-quality results.

The sample changer is designed for ease of use, with intuitive controls and robust construction to handle a variety of sample types and sizes. Its compatibility with a wide range of analytical instruments makes it a versatile addition to any laboratory.

By automating repetitive tasks, this system not only enhances accuracy but also frees up valuable time for researchers to focus on data analysis and interpretation. Whether you're conducting high-throughput screening or detailed research studies, our automated sample changer is the perfect solution to optimize your experimental efficiency.



LOT #H1004

Two-axis Z-Phi sample stage

Features

- maximum sample mass: 1 kg
- maximum sample size: 70 mm (width) × 13 mm (height)
- maximum Z-axis travel: 13 mm
- minimum Z-axis travel: 0.625 μm
- minimum rotation step in Phi angle: 0.002°

The two-axis sample stage is an essential accessory designed to precisely align the sample surface with the center of the primary X-ray beam in automatic mode, ensuring optimal measurement accuracy and reproducibility.

This advanced stage is indispensable for a variety of specialized analytical techniques, including:

- **Grazing Incidence X-ray Diffractometry (GIXRD):** Perfect for thin-film analysis, allowing precise control of the incident angle to probe surface and interface structures.
- **X-ray Reflectometry (XRR):** Enables detailed characterization of thin films and multilayers by measuring reflectivity as a function of the incident angle.
- **Sin²ψ Residual Stress Determination:** Facilitates accurate stress analysis in materials by aligning the sample at multiple ψ angles for reliable stress calculations.
- **Texture Measurement in Iso-Inclination Geometry:** Ideal for studying crystallographic textures in polycrystalline materials, providing insights into material properties and processing effects.
- **Determination of Crystal Orientation:** Ensures precise alignment for determining the crystallographic orientation of single crystals, critical for materials research and quality control.

The stage features high-precision motors and intuitive software integration, allowing for seamless control and automation of complex alignment procedures. Its robust design accommodates a wide range of sample sizes and shapes, making it a versatile tool for both routine and advanced analytical applications. By enhancing measurement accuracy and reducing setup time, the two-axis sample stage significantly improves laboratory efficiency and data quality.

LOT #H1005

Non-ambient high-temperature chamber

Features

- heating from room temperature to 600°C;
- measurement atmosphere: vacuum (10-1 bar), air, inert gas
- high-precision temperature sensor;
- sample holder material: Ni
- sample size: 16x14 mm

A non-ambient high-temperature chamber for X-ray diffraction analysis is a cutting-edge tool engineered to investigate the structural properties of materials under controlled thermal conditions.

This advanced chamber allows researchers to study the evolution of crystalline structures as a function of temperature, offering critical insights into material behavior, stability, and performance. Such analyses are invaluable for understanding phase transitions, thermal expansion, and degradation mechanisms, which are essential for optimizing material design and application.

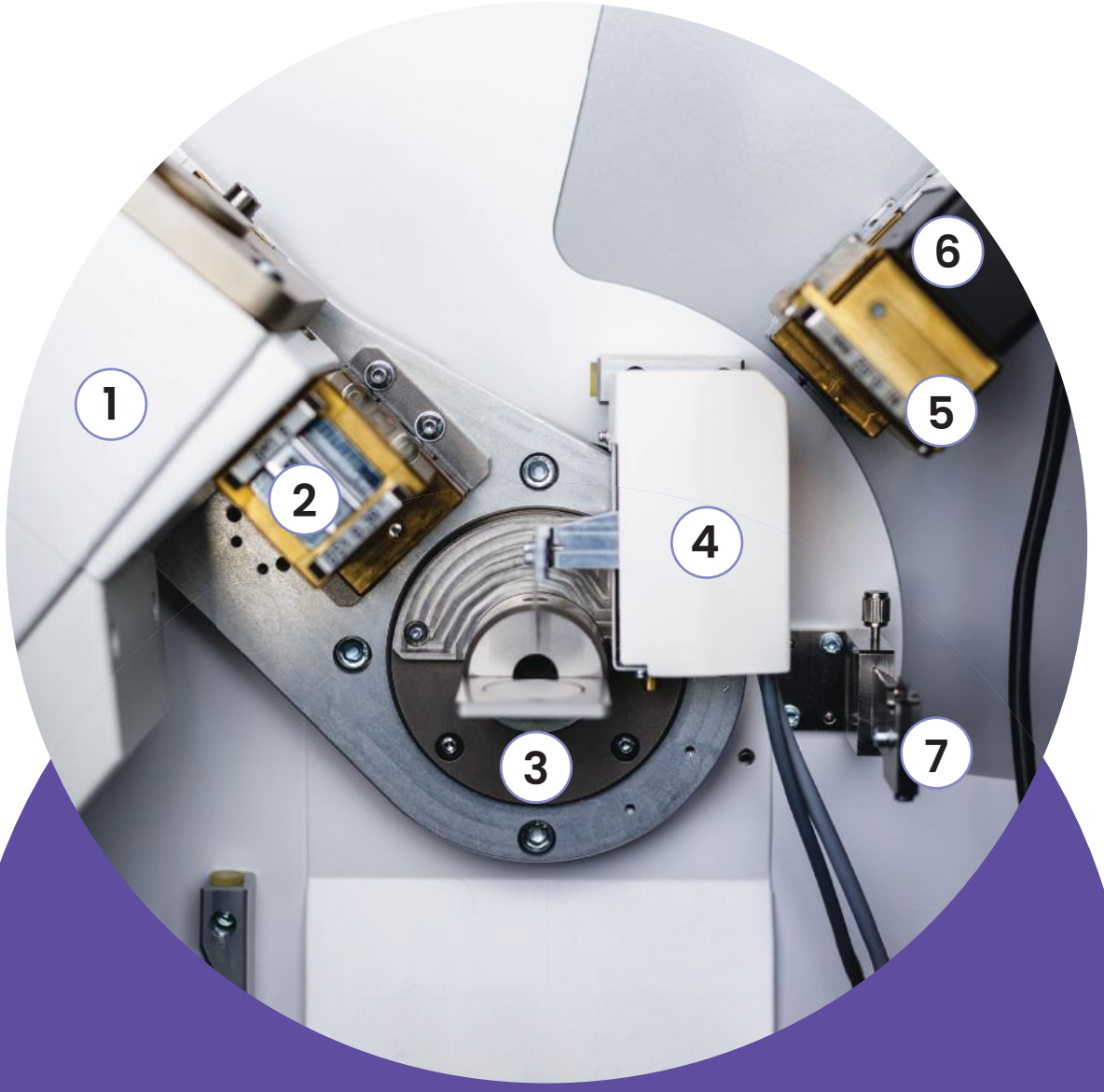
The chamber supports the fine-tuning of synthesis processes for novel materials, enabling the creation of advanced ceramics, polymers, and composites with tailored properties.

Equipped with precise temperature control and compatibility with most X-ray diffractometers, the chamber ensures accurate and reproducible results. Its robust design allows for operation at elevated temperatures while maintaining sample integrity and measurement precision. By integrating this tool into their research, scientists can unlock new possibilities in material science, driving innovation and technological advancements across multiple fields.

02. OPTICAL ELEMENTS

Experience unparalleled accuracy and precision with the TELLUS benchtop X-ray diffractometer, which incorporates the advanced Bragg-Brentano (θ-θ) optical measurement scheme. This cutting-edge design ensures optimal reflection of incident X-rays from the sample's crystalline lattice, enabling precise Bragg angle adjustment and highly focused beam alignment. The result is exceptional resolution and reliability in your diffraction data, making it an ideal tool for both routine analysis and advanced research.

The TELLUS diffractometer can be used with a diverse range of optical elements, including monochromators, collimators, and specialized detectors, which significantly expand its experimental capabilities. These components allow you to tailor the instrument to specific analytical needs, whether you're studying polycrystalline materials, thin films, or single crystals. By optimizing beam geometry and intensity, the system enhances the quality and reproducibility of your results, ensuring that even the most complex samples are analyzed with confidence.



1 – X-ray Source
(X-ray Tube with Linear Focus);
2 – Incident Beam Optics;
3 – Sample;
4 – Automated knife edge collimator;
5 – Diffracted Beam Optics;
6 – Detector;
7 – Direct beam absorber

LOT #O1001

Incident beam mask

Features

- plates material: tantalum, brass;
- distance between plates:1 to 10 mm;
- installed on the X-ray source arm;
- simple installation and replacement.

The incident beam mask limits the size of the beam in the axial direction. In most cases, the mask size corresponds to the focal length of the X-ray tube.

The size of the mask can be reduced if the size of the test sample surface needs to be reduced, for example, in the case of bulk samples of small size or having a nonplanar surface.

Distance between plates	Tantalum	Brass
1 mm	Item No. 03.03.100-05	Item No. 03.03.200-05
2 mm	Item No. 03.03.100-04	Item No. 03.03.200-04
4 mm	Item No. 03.03.100-03	Item No. 03.03.200-03
5 mm	Item No. 03.03.100-02	Item No. 03.03.200-02
8 mm	Item No. 03.03.100-01	Item No. 03.03.200-01
10 mm	Item No. 03.03.100-00	Item No. 03.03.200-00
others	On request	

LOT #O1002

Divergence slit for an incident beam

Features

- plates material: tantalum, brass;
- distance between plates: 1 to 9 mm;
- installed on the X-ray source assembly arm;
- simple installation and replacement.

The divergence slit is a precision optical component designed to form a well-defined, low-divergence X-ray beam with a small cross-section. By restricting the angular spread of the incident beam, it enables high-resolution diffraction measurements while maintaining optimal intensity.

Key Functions:

- controls horizontal beam divergence (typically 0.1° to 2° selectable)
- defines the irradiated area on the sample surface
- reduces air scattering and parasitic radiation
- improves peak-to-background ratio in diffraction patterns

Distance between plates	
1,0 mm	Item No. 03.02.100-06
1,2 mm	Item No. 03.02.100-07
1,6 mm	Item No. 03.02.100-08
2,0 mm	Item No. 03.02.100-09
3,0 mm	Item No. 03.02.100-10
4,0 mm	Item No. 03.02.100-11
6,0 mm	Item No. 03.02.100-12
8,0 mm	Item No. 03.02.100-13
9,0 mm	Item No. 03.02.100-14
Others	On request

LOT #O1003

Small-angles incident beam antiscatter slit

Features

- plates material: tantalum, brass;
- distance between plates from 10 to 800 μm;
- installed on the X-ray source arm;
- simple installation and replacement.

Small-angles measurements (2θ<10°) are accompanied by a significant increase in background radiation associated mainly with out-of-focus radiation tails of the X-ray tube. A knife collimator is used to reduce background radiation for measurements at narrow diffraction angles.

Alternatively, or as a supplement to the latter, an ASS antiscatter slit for narrow angles can be used. The ASS slits are installed into the incident beam mask socket (instead of BM1) and have numerical markings that coincide with the DS divergence slit markings.

Distance between plates

0,10 mm	Item No. 03.02.100-01
0,20 mm	Item No. 03.02.100-02
0,30 mm	Item No. 03.02.100-03
0,60 mm	Item No. 03.02.100-04
0,80 mm	Item No. 03.02.100-05
Other	On request

LOT #O1004
LOT #O1005

Soller slits for an incident and diffracted beam

Features

- plates material: molybdenum;
- 2,5o and 5,0o divergence;
- installed on the X-ray source assembly
- or detector arm;
- simple installation and replacement.

The Soller slits limit the axial divergence of the beam. Generally, the Soller slits with the same divergence are installed for the incident and diffracted beams. Basically, slits have a 5° divergence. The narrower the divergence of the Soller slit, the less the diffraction line profile is distorted, especially at low angles of incidence. Use the Soller slits with narrow divergence for precision measurements.

LOT #O1006

Diffracted-beam flat and curved graphite monochromators

Features

- Angle of misorientation of graphite crystal planes:
- flat: 0.5 ± 0.1°
- curved: 0.6 ± 0.1°

The graphite monochromator is an advanced optional optical component installed on the diffracted beam path between the sample and detector. Specifically engineered for Cu Kα radiation (λ = 1.5418 Å), this module performs two critical functions:

1. Spectral Purity Enhancement
- Isolates the Cu $K\alpha_1/K\alpha_2$ doublet by filtering out: bremsstrahlung (white radiation), $K\beta$ emission lines, sample-induced fluorescence

2. Measurement Quality Improvement
- Reduces background noise by >70% by eliminating: incoherent (Compton) scattering, air scattering effects, sample fluorescence (particularly important for Fe/Ni/Co-containing materials)
- Increases peak-to-background ratio for better detection of weak reflections

Technical Advantages (ideal for):
- quantitative phase analysis (Rietveld refinement)
- thin film measurements
- low-concentration phase detection
- Compatible with all standard XRD detectors

Alternative configurations available for Co and Mo anodes upon request.

LOT #O1007

Parallel plate collimator (equatorial Soller slit)

Features

- Divergence angle: 0.34° or 0.17°
- Window size: 3 mm × 10 mm

The collimator is a precision optical component installed on the detector arm of the diffractometer. Its primary function is to form a well-defined quasi-parallel beam from the radiation diffracted by the sample, ensuring optimal measurement conditions.

Key benefits:
- Enhanced angular resolution: significantly improves measurement accuracy in parallel-beam diffraction geometry
- Beam conditioning: produces a consistent, well-collimated beam for reliable data collection
- Versatile applications: essential for specialized measurement techniques requiring precise beam control

Typical applications include:
1. GIXRD - for thin film and surface structure analysis
2. XRR - enables precise investigation of thin film thickness and density
3. Analysis of Irregularly Shaped Samples - Provides reliable data from non-ideal polycrystalline specimens

The collimator is particularly valuable when measuring:
- Samples with surface roughness or uneven morphology
- Temperature-sensitive materials that cannot be ground to perfect powder
- Small or limited quantity specimens where conventional preparation isn't possible

Technical Note: For optimal performance, the collimator should be properly aligned with the detector and matched to the specific experimental geometry. Different slit sizes are available to balance between intensity and resolution requirements.

LOT #O1008

Parabolic mirror-monochromator on the source arm for quasi-parallel beam formation (Goebel mirror)

Features

- Outgoing beam divergence: not more than 0.04°
- Parallel beam height, h: 0.61 mm
- Average reflectivity of the mirror for Kα line emission of the source with copper anode: not less than 60%.
- Relative intensity of Kβ/Kα line at the output when using X-ray tube with copper anode: not more than 0.5%

This advanced optical system is engineered to generate a monochromatized quasi-parallel X-ray beam for superior diffraction measurements. The assembly replaces standard optical components on the source arm, offering enhanced performance for specialized applications.

Key Features and Benefits:
- produces a intense, monochromatic beam with minimal divergence (<0.1°)
- eliminates Kβ radiation and reduces fluorescence background
- maintains high beam intensity while improving angular resolution

Primary Applications:
- GIXRD - enables precise surface and thin film analysis with optimized beam geometry
- XRR - provides the required beam characteristics for accurate thin film density and thickness measurements
- Analysis of challenging samples - particularly effective for:
  - Irregularly shaped polycrystalline specimens
  - Rough or uneven surfaces
  - Temperature-sensitive materials that cannot be ground

Technical Implementation:
The Goebel mirror design ensures constant beam geometry throughout the entire angular range, overcoming limitations of conventional systems. This makes it ideal for measurements requiring:
- consistent illumination of sample surfaces
- high resolution at low angles
- minimal sample preparation

For optimal performance, we recommend pairing with a parallel-beam collimator on the detector side.

LOT #K1000

Automated knife edge collimator

Features

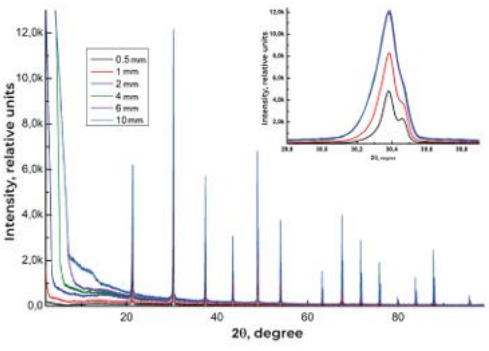
- adjustable distance between the knife edge collimator and the analyzed surface: 0 to 40 mm;
- automatic adjustment depending on the 2θ angle;
- simple installation

The automated knife-edge collimator is a precision beam-conditioning device that provides intelligent control of X-ray beam parameters through software integration.

Key functions include:
1. Active Noise Reduction System
- Motorized blades eliminate scattered radiation with micron-level precision
- Adaptive positioning compensates for sample-induced fluorescence and air scattering

2. Smart Area Irradiation
- Programmable beam footprint from 0.1 mm to 20 mm with 100 µm reproducibility

Advanced Features:
- Remote operation via diffractometer software
- Position feedback for repeatable experimental setups
- Compatibility with all standard XRD geometries (Bragg-Brentano, parallel beam, GIXRD)



LOT #K1001

Mechanical knife-edge collimator

Features

- adjustable distance between the knife edge collimator and the analyzed surface: 0 to 10 mm;
- manual adjustment;
- simple installation

A knife-edge mechanical collimator is used in X-ray diffractometry to:
- Reduce background noise – blocks scattered or stray X-rays, enhancing signal-to-noise ratio in diffraction patterns;
- Control irradiated sample area – limits the beam footprint on the sample, preventing spillover and ensuring analysis of only the intended region;
- Optimize for small samples – ideal for analyzing tiny or irregularly shaped specimens by minimizing beam divergence;

Key Benefit:
Provides sharper diffraction peaks and more accurate data by tailoring the beam's size and divergence to the experiment's needs.

LOT #X1001

Filter for diffracted beam (Kβ filter)

Features

- installed on the detector arm;
- filter material (for corresponding X-ray tube anode material): V (Cr), Fe (Co), Mn (Fe), Ni (Cu), Zr (Mo);
- filter thickness: from 0,015 up to 0,200 mm;
- simple installation and replacement.

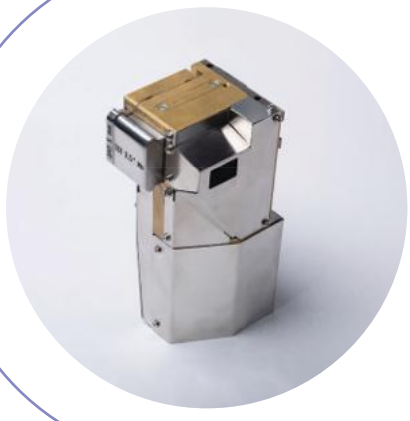
Designed for radiation monochromatization for selective suppression of the X-ray tube Kβ. The appropriate material and filter thickness are selected depending on the X-ray tube anode material and required degree of Kβ suppression.

Kβ filter material 0,025 mm

Ni (^{28}Cu tube)	Item No. 04.03.102-01
Fe (^{27}Co tube)	Item No. 04.03.102-02
Mn (^{26}Fe tube)	Item No. 04.03.102-03
V (^{24}Cr tube)	Item No. 04.03.102-04
Zr (^{42}Mo tube)	Item No. 04.03.102-05
Others	On request

LOT #V1001

Variable slit



The automatic variable slit system is designed to form and maintain a constant-size X-ray beam spot on the sample surface during measurements. It smoothly adjusts the aperture (distance between slit blades) from 50 µm to 8 mm following a non-linear 2θ-dependent function, ensuring uniform sample illumination throughout the scanning range.

A key feature of the system is the independent control of upper and lower slit blades. This allows not only beam width adjustment but also automatic beam position optimization relative to the sample. This capability is particularly valuable for precision measurements requiring strict maintenance of incident beam geometry.

The system enhances measurement reproducibility by eliminating intensity variations caused by changing irradiated area. It maintains optimal angular resolution across the entire working range and minimizes artifacts in grazing incidence measurements. With blade positioning accuracy of ±2 µm, the system guarantees stable beam parameters. It can be programmed for various operational modes to accommodate specialized experiments and incorporates built-in safety mechanisms to prevent mechanical damage.

Optional features include secondary slit synchronization and automated calibration routines for enhanced functionality. The system's intelligent design ensures reliable performance in both routine and advanced XRD applications.

03. ALIGNMENT ELEMENTS

LOT #A1001

Alignment slit for incident beam

Features

- plates material: tantalum, brass;
- distance between plates: 50 μm;
- installed on the X-ray source arm;
- simple installation and replacement.

The slit is intended for forming a small, low-divergence radiation beam.

Alignment slits are used to:

- Precisely define the X-ray beam geometry – control beam size, divergence, and direction for accurate measurements;
- Optimize instrument alignment – help calibrate the diffractometer by refining the beam path (e.g., during initial setup or maintenance);
- Reduce parasitic scattering – minimize background noise by blocking stray radiation;
- Ensure reproducibility – maintain consistent beam conditions for reliable results across experiments.

Key applications:

- Initial diffractometer alignment
- Beam conditioning for high-resolution measurements
- Grazing-incidence (GIXRD) and micro-diffraction setups

LOT #A1002

Narrow alignment slits for standard sample holder

Features

- dimensions: 1 mm x 0,05 mm, 20 mm x 0,05 mm;
- installed into the standard sample holder;
- simple installation and replacement.

The slits are intended for aligning the X-ray diffractometer. It is used when aligning the focus of the X-ray tube to level the position of the goniometer arms to the sample plane while aligning the optical unit for the incident beam

LOT #A1003

Attenuators

Features

- installed on the detector arm;
- material: Cu, Al;
- attenuator material: 0,05 to 0,20 mm.
- simple installation and replacement.

Attenuators made of copper or aluminum foil are used in XRD to control beam intensity. Inserted into the filter socket, they reduce X-ray flux during alignment or sensitive XRR measurements. Different foil thicknesses allow precise intensity adjustment, preventing detector overload while maintaining measurement quality. Essential for protecting detectors and optimizing data collection, they preserve beam geometry without affecting resolution.

Thickness	Al	Cu
0,050 mm	Item No. 07.02.100-07	Item No. 07.02.100-14
0,075 mm	Item No. 07.02.100-08	Item no. 07.02.100-15
0,100 mm	Item No. 07.02.100-09	Item No. 07.02.100-16
0,125 mm	Item No. 07.02.100-10	Item No. 07.02.100-21
0,150 mm	Item No. 07.02.100-11	Item No. 07.02.100-22
0,175 mm	Item No. 07.02.100-12	Item No. 07.02.100-23
0,200 mm	Item no. 07.02.100-13	Item No. 07.02.100-20
others	On request	

LOT #A1004

Reference calibration samples

Features

- reference samples;
- material: SRM 1976 NIST (corundum pellet), SRM 660c NIST (lanthanum hexaboride powder), SRM 675 NIST (synthetic mica powder), etc;
- solid sample dimensions: 26 mm,
- 2 mm thickness

Certified standard samples serve as essential tools for instrument validation and performance verification in X-ray diffraction analysis. These precisely characterized materials are specifically designed to evaluate and optimize diffractometer alignment, including:
- Geometric calibration (goniometer radius, zero-angle position)
- Peak position accuracy (2θ angle calibration)
- Instrument resolution (peak width/shape analysis)
- Intensity response (detector linearity verification)

Regular use of these standards ensures measurement reproducibility and validates software processing algorithms for phase identification, lattice parameter calculation, and other quantitative analyses. The calibration procedure involves comparing measured diffraction patterns against certified reference data to identify and correct any instrumental deviations. This quality control practice is particularly critical when:
- commissioning new equipment
- after hardware modifications
- as part of routine maintenance protocols
- before high-precision measurements

Optional certified reference materials are available for specialized applications like residual stress analysis or texture measurements.

Reference sample type	
SRM 1976 NIST	Item No. 00.32.303
SRM 660c NIST	Item No. 00.96.491
SRM 675 NIST	Item No. 00.37.291
Others	on request

04. X-RAY TUBES

LOT #X1002

X-ray tubes

Features

- vacuum ceramic X-ray tube for diffractometry;
- anode material: Cr, Fe, Co, Cu, Mo, Ag;
- beryllium optical windows;
- 0,4 x 8,0 focus size;
- water cooling (with a replaceable filter);
- tube power up to 2000 W

The X-ray tube is intended for forming radiation of different wavelength from 0,559 to 2,294 Å.

Anode material	Power max, kW	Wavelength, Å	Energy, keV
Cr	1.3	2.294	5.415
Fe	0.9	1.936	6.404
Co	1.2	1.789	6.930
Cu	1.5	1.541	8.048
Mo	2.0	0.709	17.479
Ag	1.5	0.559	22.163

Anode type

^{29}Cu	Item No. 04.03.101-01
^{27}Co	Item No. 04.03.101-02
^{26}Fe	Item No. 04.03.101-03
^{24}Cr	Item No. 04.03.101-04
^{42}Mo	Item No. 04.03.101-05
Others	On request

05. SAMPLE PREPARATION

One of the key factors in obtaining reliable statistical information during an experiment is sample preparation. A well-prepared sample of powdered substance consists of numerous randomly oriented crystallites. Large crystal sizes, as well as their non-random orientation, lead to changes in peak intensities. As a result, discrepancies are observed between the obtained diffraction patterns and the standard images presented in the database. Mills, mortars, and/or laboratory sieves are widely used for sample preparation.

LOT #S1001

Agate mortar

Features

- volume: from 10 ml (inner/outer diameter: 40/50 mm);
- material: natural agate;
- symmetrically ground edges;
- polished surface;
- ergonomically designed to allow the mortar to be held comfortably
- in hands while preparing samples.

Experience seamless grinding and mixing of powders with Agate Mortar and Pestle set. Crafted from natural agate, these tools are not only durable but also chemically pure, preventing any sample contamination.

LOT #S1002

Sampling sieve

Features

diameter: from 120 mm –
height: from 38 mm –
grid cells dimensions: 0,02 to 1,00 mm –

The sampling sieve is used for the sieving of powders to separate consistent powders from lumps and solids during sample preparation.

LOT #S1003

Glass plate for leveling the sample surface

Features

- rectangular shape,
- dimensions: 26×76 mm, thickness: 1,0 mm,
- ground edges,
- minimum 50 pcs supplied.

The plates are used in the preparation of measurement cuvettes to level the powdered sample with the surface of the cuvette.

LOT #S1004

Glass plate for sample preparation by reverse loading method

Features

rectangular shape –
dimensions: 75×90 mm, thickness: 2,0 mm –
ground edges and chamfers –
minimum 10 pcs supplied –

The plates are used for leveling the powdered sample with the surface of the cuvette during reverse loaded cuvettes preparation for measurement.

06. APPLICATIONS

TELLUS is a desktop powder diffractometer that meets the highest requirements for this class of instruments and even exceeds expectations in some ways. TELLUS equipped with the most advanced DECTRIS* MYTHEN2 R 1D detector what drastically speed up the measurement. Express analysis can be carried out in a few minutes while maintaining the quality of the data.

The 100% quantum efficiency of the detector and its feature to accumulate the signal keeping low noise level make it possible to collect the highest quality data. That is why this powder diffractometer can analyze even very small amounts of sample.

Pharmaceutical and cosmetics industries

Forensic expertise

Cement industry

Oil-gas exploration

Geology and mining

Chemical industry

Automotive industry

Science and education

... archeology, gemology, food industry etc.

TELLUS

In addition to its technical excellence, the TELLUS diffractometer is designed for user-friendly operation, with intuitive software that simplifies data collection and analysis. Its compact benchtop design saves valuable laboratory space while maintaining the performance of larger systems.

Whether you're investigating phase transitions, residual stresses, or crystallographic textures, the TELLUS diffractometer unlocks the full potential of your research, driving innovation in fields such as materials science, pharmaceuticals, geology, and nanotechnology.

With its combination of precision, versatility, and ease of use, the TELLUS benchtop X-ray diffractometer is the ultimate tool for advancing your scientific discoveries.

LINEV SYSTEMS®
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LL-C
Certification
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