

Advanced benchtop X-ray diffractometer





6th generation benchtop X-ray diffractometer

Rigaku

More power More flexibility More results



- Compact size allows it to be installed on a lab bench
- ½ the cost of a traditional floorstanding diffractometer
- Distinguished scientific literature record
- Easy to use, operate, and maintain
- Able to use pre-existing utilities
- 600 W of X-ray tube power

The latest version has advanced features and options that deliver powerful capability, including:

- HyPix-400 MF 2D hybrid pixel array detector
- Acquire data in 2D, 1D or 0D modes
- D/teX Ultra 1D advanced silicon strip detector
 - Uniquely available with receiving monochromator
- ASC-8 unique 8-position autosampler

MiniFlex

Rigaku's MiniFlex benchtop XRD redefines X-ray diffraction

X-ray diffraction (XRD) is a powerful and well-established technique for analyzing materials. Industries as diverse as cement, catalysis, petroleum, energy and pharmaceuticals rely on XRD to characterize materials from basic research all the way to quality control. It is also an important scientific technique taught to students who study geology, material science, chemistry and crystallography.

Rigaku MiniFlex is a fully featured, general purpose X-ray diffractometer. It can perform qualitative and quantitative analysis of polycrystalline materials. In qualitative analysis, the instrument is used to identify unknown substances (chemical compounds or "phases") by comparing experimental diffraction data against a database of known phases. In quantitative analysis, it is used to characterize solid mixtures to determine relative abundance of crystalline compounds.

Two detector choices





2D data example from HyPix-400 MF detector.



D/teX Ultra 1D silicon strip detector

MiniFlex is equipped with the D/teX Ultra high-speed 1D (one dimensional) silicon strip detector to obtain intensity a few tens to roughly 100 times greater than a conventional scintillation counter. D/teX Ultra measures data faster because it can measure a wide range of 2θ simultaneously with high angular resolution.

D/teX Ultra may be operated in 0D mode equipped with an optional graphite monochromator (shown above) to maximize sensitivity by optimizing peak-to-background ratios. In addition, this option eliminates fluorescence from materials containing Fe, Ni, Co, and Mn.

HyPix-400 MF 2D hybrid pixel array detector

MiniFlex can also be configured with the HyPix-400 MF 2D (two dimensional) hybrid pixel array detector (HPAD). This new direct photon counting detector enables high-speed, high-dynamic range, low-noise data collection in 0D, 1D, and 2D modes. This highly versatile detector is ideal for the widest range of applications, including conventional powder XRD, micro-XRD, and the measurement of complex materials with coarse grain size and/or preferred orientation.



MiniFlex X-ray diffractometer

Analysis software

SmartLab Studio II is a new software package with a user-friendly GUI that integrates all measurements and analyses. Users can choose desired modules from various plugins, such as "XRD Measurement", "Powder XRD", and "Data Manager", and operate them on a single platform with an improved analysis environment and operability.

SmartLab Studio II employs a workflow bar to guide users through the necessary steps from setup and measurement to analyzing and reporting, so instrument operation is always straightforward.

SmartLab Studio II has a rich feature list:

- Search/Match analysis
- Percent crystallinity
- Cell refinement
- Indexing
- Ab initio structure solving
- Quantitative analysis
- Crystallite size and strain
- Whole pattern profile fitting
- Rietveld refinement
- Lattice parameter refinement



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Options and accessories





High-speed, 1D silicon strip detector standard for fast, high-resolution scanning in 0D and 1D modes.



Graphite monochromator for the D/teX Ultra

The graphite monochromator optimizes sensitivity by lowering the background level. It improves signal-to-noise by eliminating fluorescence from materials containing Mn, Fe, Co, and Ni.



HyPix-400 MF: 2D HPAD detector

Optional advanced hybrid pixel array detector (HPAD) with zero background noise, an active area of 400 mm², spatial resolution of 100 μ m, and maximum count rate of 10⁶ cps/pixel or more. HyPix-400 MF can operate in 0D, 1D or 2D modes.







The sample spinner allows continuous rotation to minimize the effects of preferred orientation.



BTS 500 and BTS 150 heating and cooling temperature attachments The high temperature attachment can heat a sample to perform *in situ* powder diffraction measurements under high temperature conditions from ambient to 500°C.



Sample holders Various sample holders are available to meet the specific needs of each lab.



Air-sensitive sample holder

An air-sensitive sample holder is available for users studying materials that might degrade in the presence of air.