

Bruker **AXS**



D8 FOCUS

● Diffraction Solutions

think forward

XRD



The concept behind the D8 FOCUS is to provide you with a reliable workhorse for powder diffraction applications — attractively priced entry-level solution without compromise.

The D8 FOCUS is designed to be the ideal solution for phase and structure analysis of your powder samples.

What is X-ray diffraction?

At the beginning of the 20th century, Max von Laue and William H. and William L. Bragg formulated the principles of X-ray diffraction — based on the findings of Wilhelm Conrad Röntgen — that are still valid today. Phase analysis with the aid of powder diffraction is still based on Bragg's law:

$$d = \frac{n \cdot \lambda}{2 \cdot \sin \theta}$$

It combines the characteristic crystal lattice spacing d for each solid material with the applied X-ray wavelength λ . The measurement provides the intensity distribution as a function of the angle θ . If Bragg's law is fulfilled, maximum intensity is observed. This one simple "fingerprint" can unmistakably identify the unique crystalline phases contained in any sample. Even today, new phases are discovered and made available to others via databases. These informations serve in applications like quality control of raw materials, exploration and mining, or pure scientific research.

The D8 FOCUS achieves optimum results in X-ray powder diffraction applications. The D8 FOCUS standard configuration is equipped with all the necessary components for:

- Qualitative phase analysis
- Quantitative phase analysis
- Structure solution and refinement
- Crystallite size determination
- Microstrain analysis

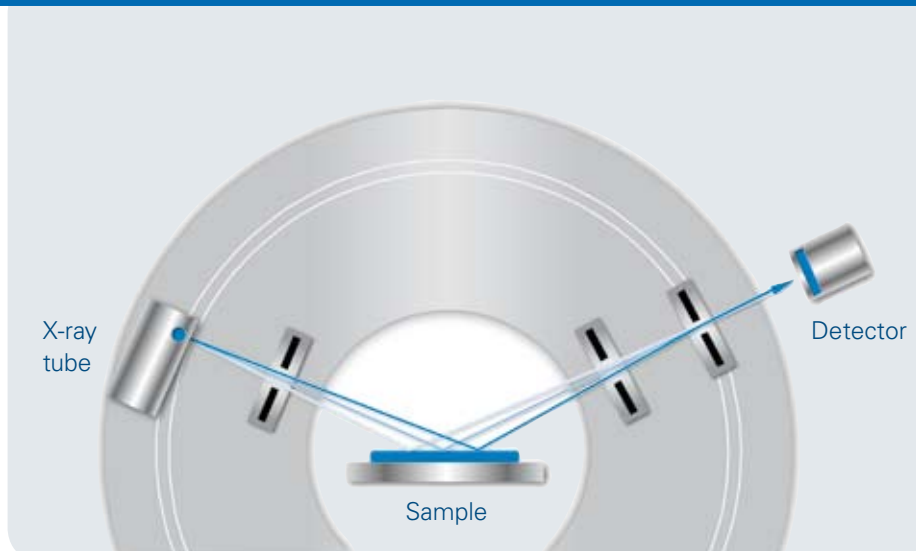
The optimum geometry is the most important criterion for you to achieve fast, precise results and abundant structural information in the characterization of materials. Sample variety is not an issue — the D8 FOCUS provides a pathway to handle each and every sample.

D8 FOCUS – Your Dedicated Performer for Powder Diffraction

The D8 FOCUS is preconfigured for a wide range of analytical tasks and is engineered to be your dedicated performer for X-ray powder diffraction. The standard configuration is called Bragg-Brentano geometry. It is the solution for most applications in X-ray powder diffraction.



- **Highly accurate**
- **Optimum performance**
- **Quick to learn**
- **Intuitive operation**
- **Precision engineered**
- **Upwardly compatible**
- **Advanced safety features**
- **Attractively priced**



D8 FOCUS – The Decision for Software Efficiency

Measurement

- Choice of table or graphic charts for measurement parameters
- Full network compatibility including interactive measurement from remote locations

Evaluation

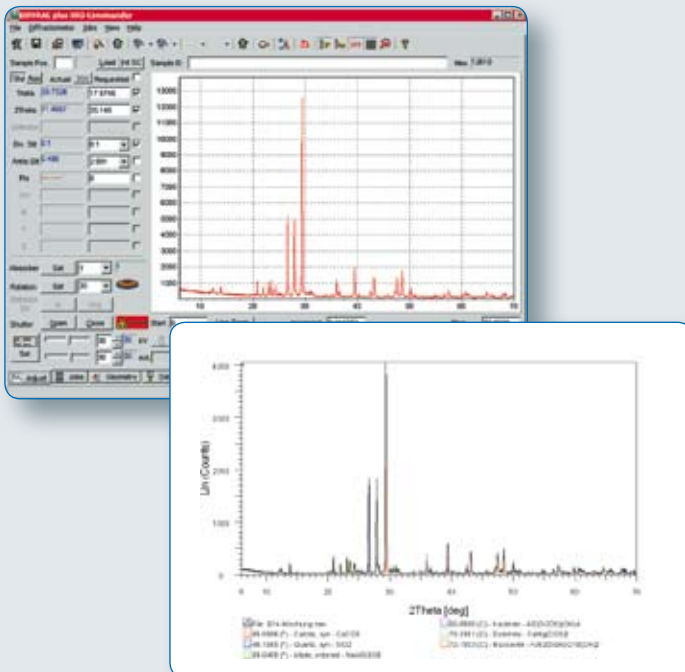
- Intuitive graphical user interface
- Automatic or interactive evaluation
- Real time calculation and display parameters

Analysis

- DIFFRAC^{plus} SEARCH for fast identification of phases with commercially available databases

Report

- Individually configure your presentation style
- Direct data exchange with other Windows applications



An outstanding feature of Bruker AXS's X-ray Diffraction Solutions is the user-friendly operation for measurement analysis and presentation. The easy-to-use concept of DIFFRAC^{plus} software provides an intuitive process in obtaining the results you want. The main application for material characterization is qualitative and quantitative phase analysis. Beyond phase analysis, DIFFRAC^{plus} provides additional software packages for other applications like structure examination, crystallite size determination and microstrain analysis. Powerful algorithms allow you to perform all of these applications standardless.

- Intuitive measurement setup with XRD Wizard
- Simple entry of search criteria
- Superior full-pattern search compatible with commercially available databases
- Customizable user interface
- Comprehensive graphical display options
- Direct data exchange with spreadsheets, word processors and other Windows applications
- Network ready (TCP/IP)

D8 FOCUS – Push-Plug Technology: No Tools Required!

Our unique Push-Plug technology allows effortless exchange of optics, sample holders or detectors without realignment. The D8 FOCUS is your dedicated performer, providing highly efficient solutions for most applications in X-ray powder diffraction. It provides a flexible platform for future expansion by offering numerous accessory options that will grow with your needs.



Push-Plug technology: hanging sample holders as well as complete configurations has never been easier!



D8 FOCUS – Fine-Tune Your Configuration

Primary

Göbel Mirror

Fixed or motorized slit

FLIP-STICK for 9 samples

Auto Changer for up to 90 samples

Rotating stage

Sample stage

High-temperature chamber

Low-temperature chamber

Scintillation counter



1D LYNXEYE™ detector



SOL-XE detector



Secondary

- Fixed or motorized slits
- Göbel Mirror for parallel beam geometry FLIP-STICK for samples
- Auto Changer for up to 90 samples
- Rotating stage
- High-temperature chamber, heatable up to 1600 °C / 2912 °F
- Low-temperature chamber (LN₂) Soller slit and scintillation counter for grazing incidence diffraction
- 1-dimensional LYNXEYE™ detector to reduce measuring time even with very small sample amounts
- SOL-XE detector for fluorescent samples

D8 FOCUS configuration options

	Primary	Sample Stage	Secondary
Powder Diffraction	Fixed slit	Standard stage	Fixed slit + scinti
High throughput	Fixed slit	FLIP-STICK	Fixed slit + scinti
Surface and coating	Fixed slit	Standard stage	Soller slit + scinti
Irregularly shaped samples	Göbel Mirror	Standard stage	Soller slit + scinti
Geological/ fluorescent samples	Automated slit	Rotating stage	Variable slit + SOL-XE
Non-ambient	Göbel Mirror	Temperature chambers	Soller slit + scinti
High speed	Automated slite	Rotating stage	LYNXEYE

Technical Data

Goniometer

Operating mode	Vertical Theta/2Theta geometry
Measuring circle diameter	401 mm
Angular range (without accessories)	360°
Maximum useable angular range	-110° < 2Theta ≤ 168° (depends on accessories)
Angle positioning	Stepper motors with optical encoders
Smallest addressable increment	0.0001°
Reproducibility	± 0.0001°
Maximum angular speed	30°/s (depends on accessories)

General space requirements

Exterior dimensions	2035 x 1400 x 1260 mm, 46.90 x 55.12 x 46.90 inch (h x w x d)
Weight (without optional electronics)	550 kg
Cooling water supply (without optional internal water chiller)	Flow: min. 4 l/min. Pressure: 4 - 7.5 bar with no back pressure, Temperature: 10 to 20 °C
Power supply	Single phase: 208 to 240 V Three phases: 120 V, 230 V, 240 V 47 to 63 Hz
Maximum power consumption	6.5 kVA (without controllers for optional equipment)

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