SINCE 1887

# POWDER DIFFRACTOMETRY

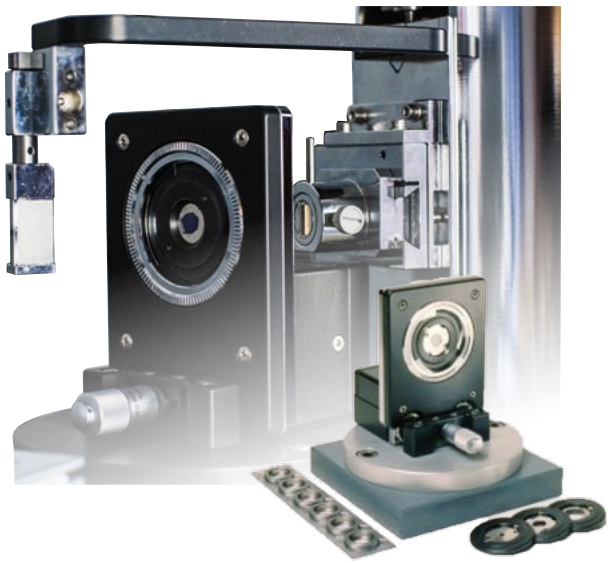
# ACCESSORIES



YOUR PARTNER IN X-RAY DIFFRACTION

STOE & Cie GmbH | WWW.STOE.COM

# POWDER DIFFRACTOMETRY
# TRANSMISSION/DEBYE-SCHERRER





## TRANSMISSION SAMPLE HOLDER

### APPLICATIONS

- Quick overview measurements as well as Rietveld quality data collection
- Polymer samples (fibres or foils) – Very small sample amounts
- As very thin films of sample can be prepared on STOE's zero scattering foils, this technique is preferable for highly absorbing materials when measured in transmission mode

### CHARACTERISTICS

- Easy and clean preparation of samples on zero scattering foils
- Convenient loading of sample inserts with different inner diameters
- Sample displacement and – thickness can be corrected by a micrometer screw
- Sample rotation in a high precision ball-bearing guarantees minimal reflex broadening and low noise

**AVAILABLE FOR**
**> STOE STADI P / MP / COMBI**

## CAPILLARY SAMPLE HOLDER

### APPLICATIONS

- Minimising preferred orientation leading to accurate intensities for structure solution and Rietveld refinement
- Obtaining narrow FWHM and symmetric profiles
- Suitable for air sensitive and hygroscopic materials in sealed capillaries
- Also used with low temperature attachments

### CHARACTERISTICS

- Glass capillaries between 0.1 and 2.0 mm diameter
- A precise goniometer head, aligned by video CCD control, guarantees coincidence of capillary and diffractometer axis

**AVAILABLE FOR**
**> STOE STADI P / MP / COMBI**



## PERMANENT ALIGNED CAPILLARY SAMPLE HOLDER

### APPLICATIONS

- Qualitative and quantitative phase analysis
- Fast data acquisition in combination with the IP-PSD

### CHARACTERISTICS

- Auto-alignment due to three guide bushes
- Easiest capillary exchange
- Sample rotation for excellent statistics
- Height adjustment for an optimal sample position in the X-ray beam
- Capillaries between 0.1 and 1.1 mm

### AVAILABLE FOR

> STOE STADI P / MP / COMBI



## GANDOLFI SAMPLE HOLDER

### APPLICATIONS

- Accurate investigations of samples with preferred orientation

### CHARACTERISTICS

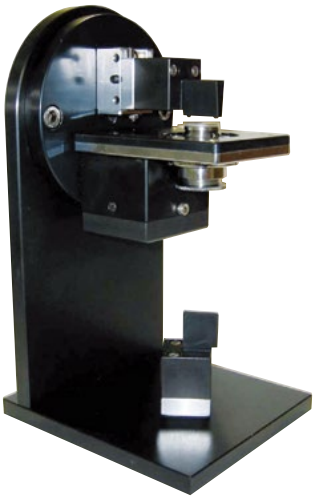
- Precise goniometer head
- 45° phi axis
- Permanent rotation

### AVAILABLE FOR

> STOE STADI P / MP / COMBI



# POWDER DIFFRACTOMETRY
# REFLECTION





## REFLECTION SAMPLE HOLDER

### APPLICATIONS

The reflection mode has to be applied in all cases the transmission or the capillary techniques cannot be used, e.g. for measurements of bulk materials, liquids, Langmuir-Blodgett films or thin layers.

### CHARACTERISTICS

- Precise height adjustment of the sample using a reference blade
- Zero background sample inserts with or without cavity

**AVAILABLE FOR**
**> STOE STADI P / MP**

## REFLECTOMETRY SAMPLE HOLDER

### APPLICATIONS

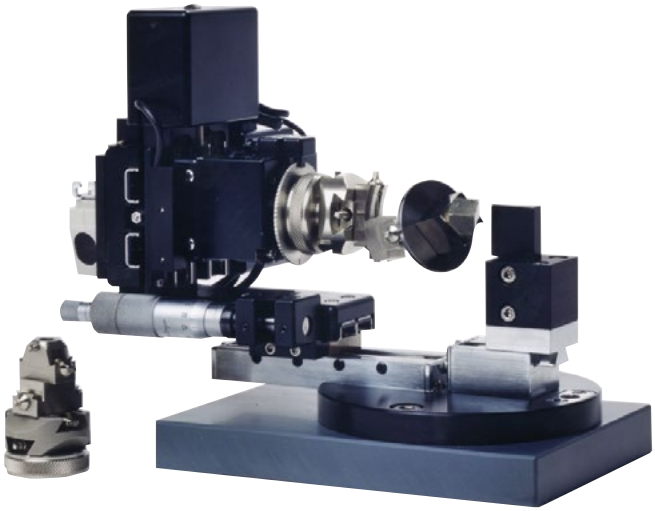
As misalignment of the sample strongly affects the quality of the results in reflectometry experiments, STOE's Reflectometry Sample Holder has been designed for accurate alignment for e.g.:

- Reflectometry experiments to determine film thickness, composition and interface roughness
- Standard powder diffractometry
- Grazing incidence experiments for phase analysis of thin films

### CHARACTERISTICS

- Reference blade for reproducible height adjustment
- Micrometer-controlled sample alignment with digital sample position display
- Reference blade serves as collimator in reflectometry measurements
- Manual tilt correction possible
- Sample spinning for wide-angle X-ray diffraction

**AVAILABLE FOR**
**> STOE STADI P / MP**



## MULTI-PURPOSE ANALYZER STAGE

### APPLICATIONS

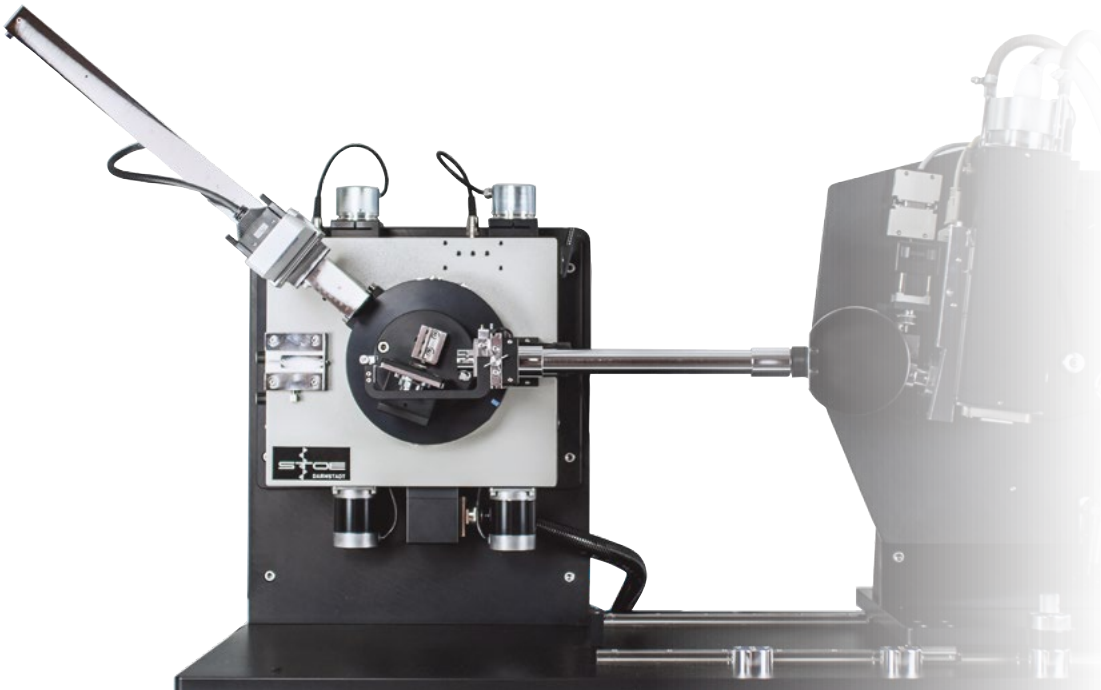
- Determination of crystal axis orientation of large single crystals
- Alignment of the goniometer head carrying a large single crystal for grinding and cutting
- Automatic XRPD-analysis of round or squared sample arrays in combinatorial analysis

### CHARACTERISTICS

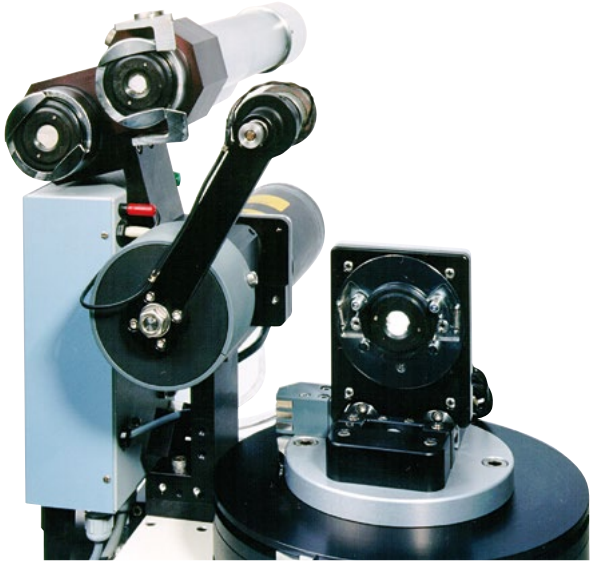
- Standard ACA goniometer head mount
- Motorized and PC-controlled X and Y translation +/- 10 mm with a resolution of 5 µm
- Motorized and PC-controlled rotation with a resolution of 0.0072°
- Manual micrometer-controlled Z translation (0 – 50 mm) for the alignment of a crystal surface or a sample array to the reference blade

### AVAILABLE FOR

> STOE STADI P / MP



# POWDER DIFFRACTOMETRY
# HIGH TROUGHPUT





## TRANSMISSION AND REFLECTION SAMPLE CHANGER

### APPLICATIONS

The sample changers for transmission or reflection can be set up on the diffractometes as pre-aligned additional units and are controlled by the software package WinX$^{POW}$. The user benefits from fast sample throughput, proven reliability and high quality data sets.

Each file is carrying its unique identifier accessible through the flexible WinX$^{POW}$ file management system. The STOE sample changers are as easy to exchange as the other STOE sample holders.

## TRANSMISSION SAMPLE CHANGER

### CHARACTERISTICS

- Capacity of up to 30 samples
- Easy load/unload function
- Controlled by STOE´s Software Package WinX$^{POW}$

**AVAILABLE FOR**
**> STOE STADI P/MP**

## REFLECTION SAMPLE CHANGER

### CHARACTERISTICS

- Capacity of up to 12 samples
- Easy height adjustment for bulk samples with different thickness (up to 20 mm)
- Controlled by STOE´s Software package WinX$^{POW}$

**AVAILABLE FOR**
**> STOE STADI P/MP**



## CAPILLARIES SAMPLE CHANGER

### APPLICATIONS

The sample changer for capillaries has been developed for automated measurements of up to 10 capillaries in Debye-Scherrer mode. The capillaries have only to be inserted in the guide bushes, therefore no alignment, e.g. of a goniometer head, is necessary. The position of the capillaries in the X-ray beam and their exposure time are menu-driven by STOE's control and evaluation software. A manual height adjustment to optimize the amount of sample material in the beam is, of course, included.

### CHARACTERISTICS

- Capacity of up to 10 capillaries
- Additional height adjustment for optimized sample position in the beam
- No capillary alignment necessary

### AVAILABLE FOR

> STOE STADI P / MP



## HIGH THROUGHPUT AND COMBINATORIAL ANALYSIS SAMPLE CHANGER

### APPLICATIONS

- Fast measurements even of small amounts of sample material
- Measurements of liquids
- Whole area of combinatorial and high throughput analysis

### CHARACTERISTICS

- Variable X, Y grid
- Easily exchangable inserts for up to 96 samples
- Height adjustment by micrometer screw
- Menu driven position control

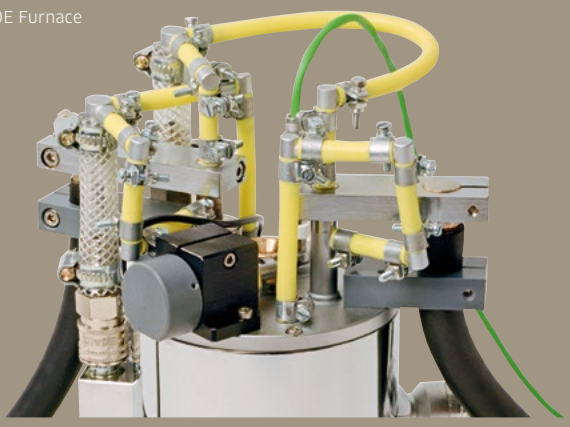
### AVAILABLE FOR

> STOE STADI P / COMBI



# POWDER DIFFRACTOMETRY
# HIGH TEMPERATURE ATTACHMENTS

STOE Furnace



## HIGHEST ACCURACY FOR CAPILLARIES

The STOE STADI P and STADI MP is the ideal equipment for the observation and evaluation of phase transitions in non-ambient environments. Therefore STOE has developed the capillary furnace series for powder investigations at high temperatures for three different temperature ranges:

- The basic version from RT to 1000 °C
- The extended T version from RT to 1500 °C
- The furnace with low temperature option for a range from – 50 ° to 1000 °C

All STOE furnaces are delivered with a referring temperature controller in a 19" rack containing power supply, flow meter for the cooling water control and interface to the PC.

All three versions provide sample spinning to avoid effects from preferred orientation. The temperature programs are easy to being set-up and executed. The temperature stability in the whole range is below +/- 1 °C.

The STOE furnaces can be mounted on every **STADI P** and **STADI MP** diffractometer. Heating elements are available for capillaries with diameters from 0.2 to 1.0 mm.

Basic version mounted on a fixed stage with STOE´s large IP-PSD, video CCD and tube housing.



| TECHNICAL SPECIFICATIONS | BASIC VERSION | EXTENDED VERSION | LOW-TEMPERATURE VERSION |
|---|---|---|---|
| **Temperature range** | RT – 1000 °C | RT – 1500 °C | -50 °C – 1000 °C |
| **Thermo couple** | Ni/CrNi | Pt/PtRh | Ni/CrNi |
| **Heating power** | 1000 W | 1300 W | 1300 W |
| **Max. heating rate** | 50°/min | 50°/min | 50°/min |
| **2θ range** | 0 – 90° | 0 – 90° | 0 – 90° |
| **Sample holder** | Capillary | Capillary + Pt-/Ir-Wire | Capillary |

STOE SINCE 1887

STOE & Cie GmbH
Hilpertstrasse 10
64295 Darmstadt | Germany

P +49 (0) 6151 988 70
F +49 (0) 6151 988 788
info@stoe.com

WWW.STOE.COM