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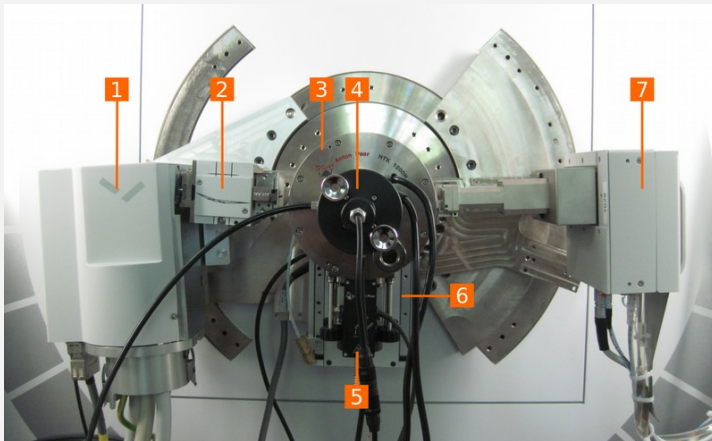
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PANalytical EMPYREAN

Ambient and Non-Ambient PXRD

The PANalytical EMPYREAN X-ray diffractometer is equipped with a Mo-tube (/Cu-tube), an AntonPaar HTK 1200N high-temperature oven-chamber and a state of the art X-ray detection system, the GaliPIX^{3D} (with nearly 100 % efficiency for high energy Mo radiation). This setup allows high quality high-resolution data collection at ambient and non-ambient conditions for reflection and transmission measurements up to 1200 °C in air.

Experimental Setup - Overview



- 1) Mo-tube
- 2) focusing mirror
- 3) HTK 1200N oven-chamber
 - homogenous sample temperature through radiation heating
- 4) capillary extension/- spinner
 - a variety of capillary holders, capillary materials and diameters can be used
- 5) sample-carrier/- spinner
 - alumina sample carrier for powder and bulk samples (up to 5 mm thickness)
- 6) motorized alignment-stage
 - sample height alignment and compensation of height variations of the sample upon heating
- 7) GaliPIX^{3D} detector

Applications

- Lattice parameter measurements
- Coefficients of thermal expansion
- Structure determination
- Investigation of phase diagrams
- Studies of chemical reactions
- Dynamic structure changes
- Capillaries: Measurement of air sensitive samples and/or small sample quantities, preferred orientation effects are reduced (except for needle-shaped crystallites)