Anton Paar

::: Innovation in Materials Science

CHC plus^{+} – The Combined Cryo & Humidity Set-up

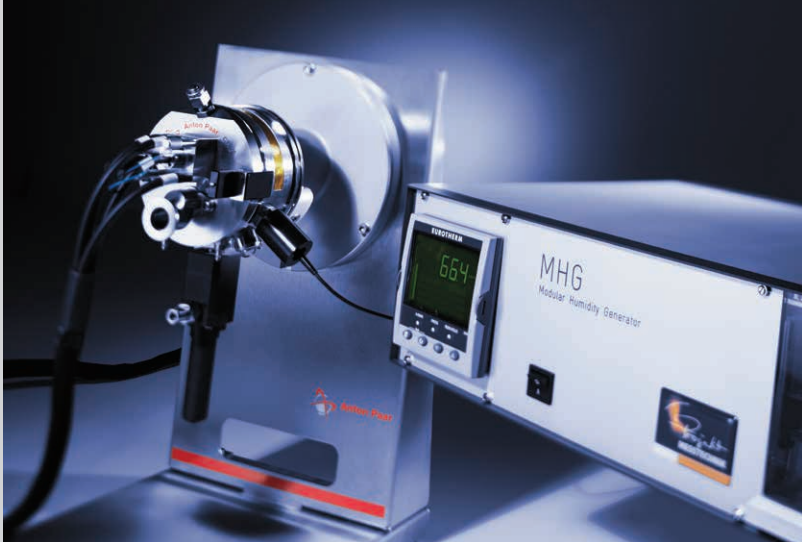
CHC plus^{+} is a unique combination of the multi-purpose CHC Cryo & Humidity Chamber for in-situ X-ray diffraction (XRD) studies and an advanced humidity generator. This new combined set-up is focussed on powder XRD studies of pharmaceuticals and building materials at low and high temperatures as well as under controlled humidity conditions.

The all-in-one solution for heating, cooling and controlling humidity!

A new approach for precise humidity control

CHC plus+ is the integrated combination of the CHC plus+ Cryo & Humidity Chamber with the advanced MHG Modular Humidity Generator produced by Projekt Messtechnik. The gas humidifier is mounted directly on the CHC plus+ chamber and the humidity is controlled with a calibrated RH sensor located inside CHC plus+ close to the sample. The chamber housing is temperature-controlled with a water bath.

This set-up together with the excellent control performance of the MHG generator provides uniform and well defined humidity conditions around the sample.



The all-round XRD sample stage

The CHC plus+ Cryo & Humidity Set-up is the ideal instrument for combined cryogenic, high temperature and humidity X-ray diffraction studies of crystalline materials. CHC plus+ can control the sample temperature from -180 °C to +400 °C and can produce a sample environment with 5 to 95 %RH from 10 to 60 °C and 5 to 70 %RH at 80 °C.

All types of experiments can be done in one go without removing the sample. Easy sample preparation without the need for realignment after sample exchange considerably speeds up measurement preparations. Different sample holders including a zero background holder are available.

Fast heating and cooling

The CHC plus+ Cryo & Humidity Chamber is equipped with a resistance heater and compressed-air cooling for fast sample heating and cooling from -5 °C to +400 °C. Optionally, CHC plus+ can be operated with liquid nitrogen cooling from -180 °C to +400 °C.
A Pt 100 temperature sensor is integrated in the sample holder for accurate measurement and control of the sample temperature.

A wide range of applications

The large temperature range combined with the possibility to control the humidity around the sample make CHC plus+ the ideal tool for XRD studies of temperature- and humidity-induced changes of crystal structures. This solution is particularly helpful for studying structure-related aspects of properties, production and storage of many pharmaceuticals, food ingredients and building materials.

Features and benefits

- All-round sample stage with wide temperature and humidity range
- Accurate sample temperature measurement and control
- New MHG humidity generator and calibrated humidity sensor close to the sample for accurate humidity control
- Uniform humidity inside the sample chamber
- Gas humidifier on the CHC plus+ chamber and temperature-controlled chamber housing to avoid condensation problems
- Easy change-over from low and high temperature experiments to humidity measurements without removing the sample from the chamber
- Easy sample preparation
- Zero background holder for X-ray transparent samples
- Camera for the visual inspection of sample changes during humidity experiments

Technical Specifications	
Humidity	5 to 95 %RH from 10 to 60 °C 5 to 70 %RH at 80 °C
Temperature range with compressed-air cooling	Dry air: -5 to 300 °C Vacuum: -5 to 400 °C
Temperature range with liquid nitrogen cooling	Vacuum: -180 to 400 °C Dry air: -120 to 300 °C
Atmospheres	Air, nitrogen, inert gas, vacuum
X-ray geometry	Reflection

Your distributor:

www.anton-paar.com