

Triclinic Labs installs and now offers Variable Temperature – Variable Relative Humidity Powder X-ray Diffraction (PXRD)

The system offers temperature and humidity control for real time

observation of structural changes in materials under non-ambient conditions using PXRD.

LAFAYETTE, IN, UNITED STATES, May 31, 2023 /EINPresswire.com/ -- Today, Triclinic Labs

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Steef Boerrigter, Ph.D.

announced it had completed installation and performance testing using model systems, of the new Anton Paar CHCplus Cryo and Humidity Chamber with Liquid Nitrogen Cooling. This system offers a unique combination of temperature and humidity control for real time observation of structural changes in materials under non-ambient conditions using Powder X-ray diffraction.

Steef Boerrigter, Ph.D. who leads the materials modeling group at Triclinic Labs stated: “This instrumentation combination enables in situ characterization under an incredibly wide range of working conditions you might encounter in development, manufacturing, and storage. When combined with differential scanning calorimetry,

thermo-gravitational analysis, and/or dynamic vapor sorption analysis, it offers an incredibly deep understanding of phase transitions that are otherwise very difficult or impossible to observe. In addition to equilibration studies, scanning mode analysis offers a view of the rate and dynamics of the phase transitions.”

Often referred to as [Variable Temperature – Variable Relative Humidity Powder X-ray Diffraction](#) (VT/VRH/PXRD). This new addition supports investigations into pharmaceuticals, fine chemicals, and clays or zeolites in humid air, inert gasses, or vacuum. Due to its versatility, the new VT/VRH/PXRD setup opens new dimensions in analysis for materials science.

The VT/VRH/PXRD system at Triclinic Labs offers the following features:

- 2% to 95% relative humidity with variable temperature from 10 to 80 °C,
- –5 °C to +300 °C in air or dry nitrogen,

- -120 °C to +300 °C using liquid nitrogen cooling system,
- -180 °C to +400 °C using liquid nitrogen cooling system and vacuum,
- Atmospheres: vacuum (< 10⁻² mbar), air, inert gasses,
- Reflection-geometry PXRD in 2 θ range of 0°–164°,
- Data collection strategies include program-controlled VT/VRH points or continuous scanning modes.

For more information on how Triclinic Labs can assist with in-situ VT/VRH/PXRD sample analysis needs, please request a free consultation by clicking here. To contact Steef Boerrigter, you may email him at sboerrigter@tricliniclabs.com.

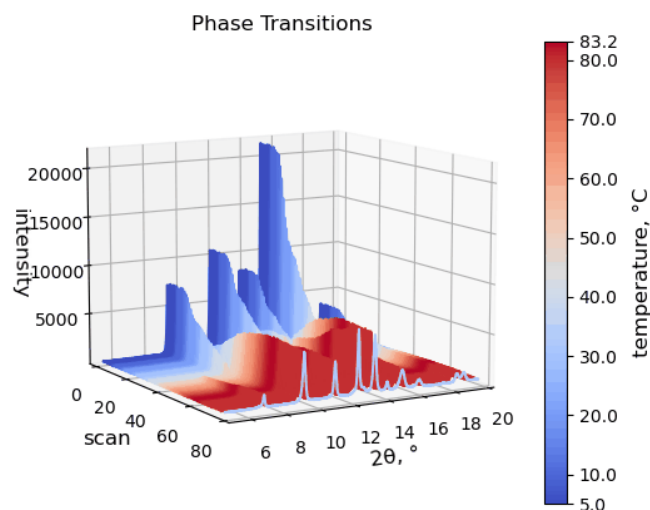
Steef Boerrigter, Ph.D.

Triclinic Labs, Inc.

sboerrigter@tricliniclabs.com

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X-ray diffraction patterns of theophylline monohydrate (Theo-FM) held at 5% rH collected between 5 °C and 83 °C. Conversion from the monohydrate to a metastable form occurs (Theo-Meta). At 55 °C the Theo-FM disappears. Theophylline Form II (Theo-F2) appears at 40 °C.

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