

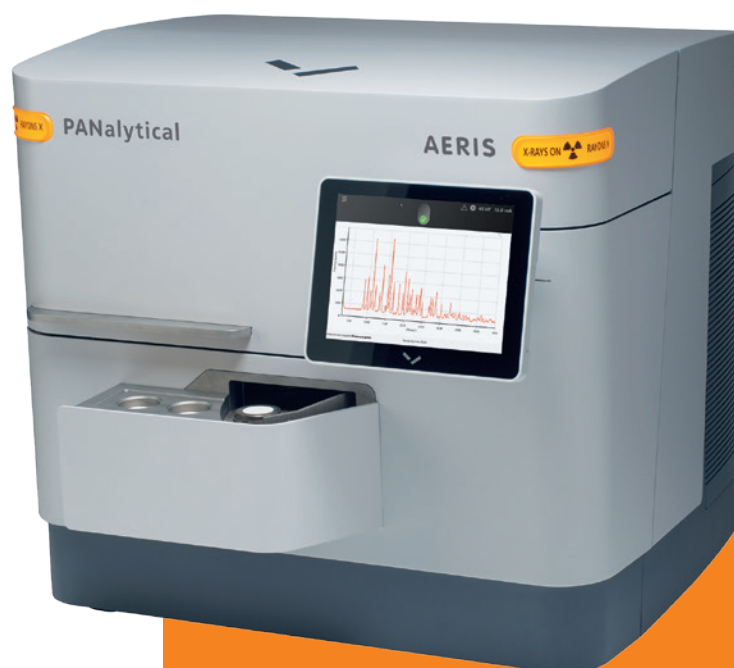


PANalytical
get insight



Aeris

Research edition





"It's like making a cup of coffee...except it's even easier"

Watch our video on www.XRDisEASY.com

Surprisingly intuitive

Meet the Research edition of Aeris – PANalytical's easy-to-operate and user-friendly benchtop X-ray diffractometer. With its intuitive operation, Aeris makes X-ray diffraction so simple that it is accessible for everyone. The unique touch screen user interface lets you proceed effortlessly through the measurement process of your samples.

The Research edition of Aeris is your companion for quick scans in the laboratory. It can easily be placed on a desk, does not need much space and only a single-phase power supply. Even inexperienced students can easily get started with any X-ray diffraction analysis. They do not have to invest time in a lengthy introduction or wait for measurement time on an expensive instrument. What is more, Aeris' 2-dimensional X-ray diffraction capabilities are ideal for teaching the fundamentals of XRD.

An easy touch



Place sample and enter sample information



Select measurement program and hit start



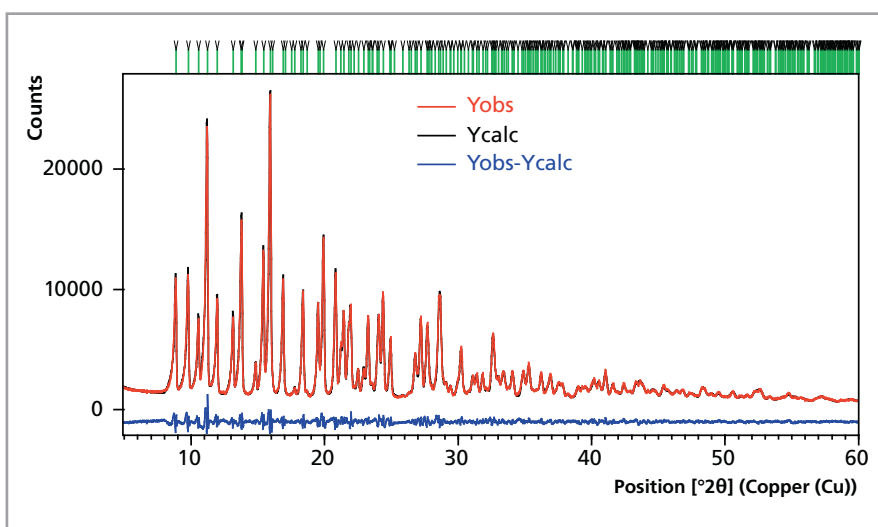
Outperforming expectations

The Research edition of Aeris is your workhorse for rapid phase identification and Rietveld analysis of powder samples. The instrument provides fast, reliable and accurate materials analysis solutions for all your needs. Thanks to the incorporation of technologies that have already proven their benefits on PANalytical's high-end systems, the Research edition of Aeris delivers data quality that was previously only possible with a full-size floor-standing system.

What about an achievable resolution of $<0.04^\circ 2\theta$ on LaB_6 ? Or what about a 2θ linearity of well below $\pm 0.02^\circ 2\theta$?

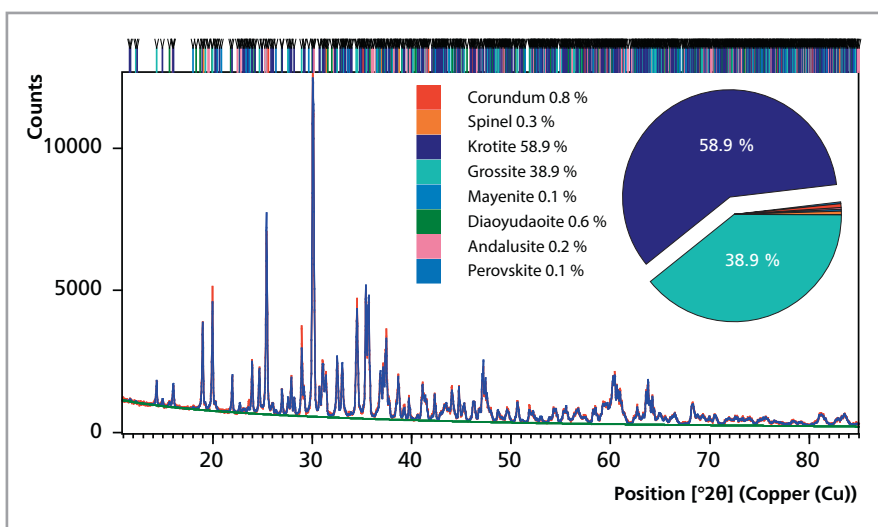
The Research edition of Aeris is very flexible and offers possibilities for all sorts of X-ray powder diffraction measurements. The instrument can accommodate various types of sample holders including non-ambient stages and sample changers. At the same time, the Research edition of Aeris is designed for low cost of ownership. The instrument does not need compressed air or cooling water, has low power consumption and it has a virtually unlimited lifetime of the X-ray tube.

Aeris can be used for Rietveld refinement on pharmaceuticals, for instance tetracycline hydrochloride



Rietveld refinement of tetracycline hydrochloride

Rietveld quantification of phase mixtures can be done reliably using Aeris.

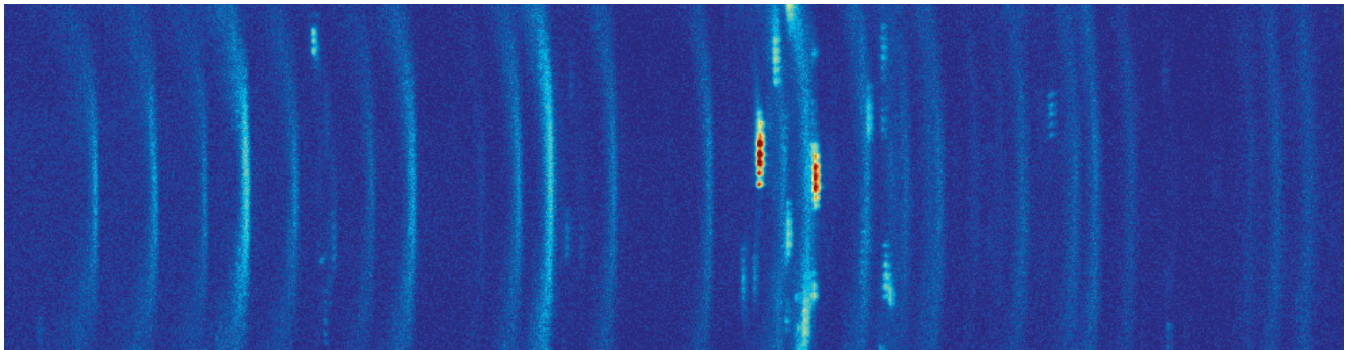


Rietveld refinement of high-temperature ceramic

2-dimensional X-ray diffraction

The Research edition of Aeris is the only benchtop X-ray diffractometer that can be delivered with a 2D Debye-Scherrer kit providing the possibility to perform basic 2D diffraction experiments. This kit is ideal for teaching the fundamentals of X-ray powder diffraction in a visual manner.

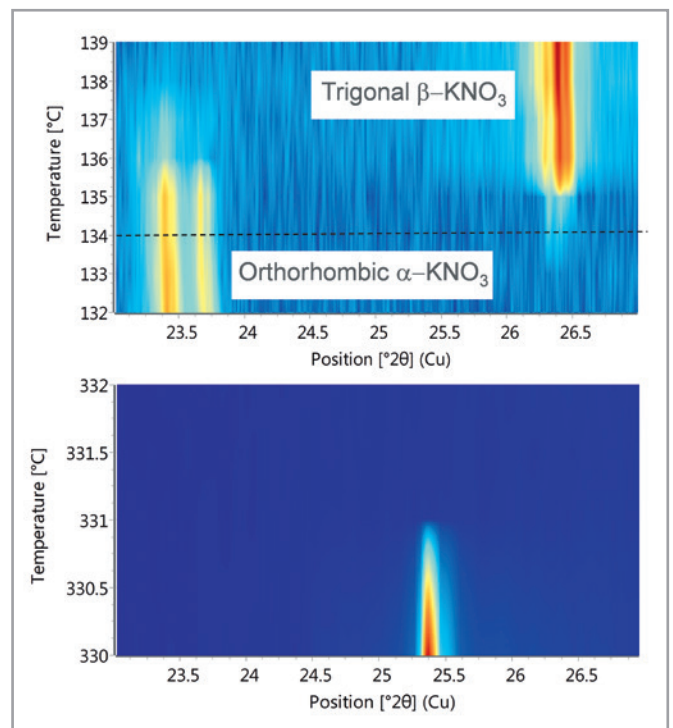
Furthermore, with the 2D Debye-Scherrer kit you can determine whether your sample contains randomly oriented crystallites (continuous rings), if it shows preferred orientation/texture or consists of larger crystallites resulting in bad particle statistics (spotty rings) during your diffraction measurement.



2D Debye-Scherrer rings of a mixture of silver behenate and tetracycline hydrochloride

Non-ambient capabilities

With Aeris, *in-situ* measurements as function of temperature are also available using BTS chambers from Anton Paar to study phase transitions.



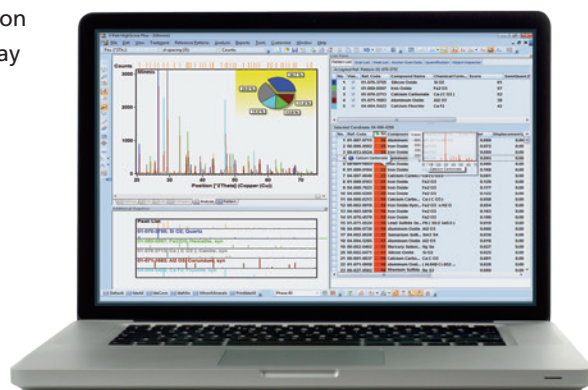
(Top) Phase transformation from α - to β -polymorph of KNO₃ observed at ~ 134 °C
(Bottom) Melting of KNO₃ occurred at ~ 331 °C
The data are courtesy of Anton Paar GmbH, Austria.

Data for your research

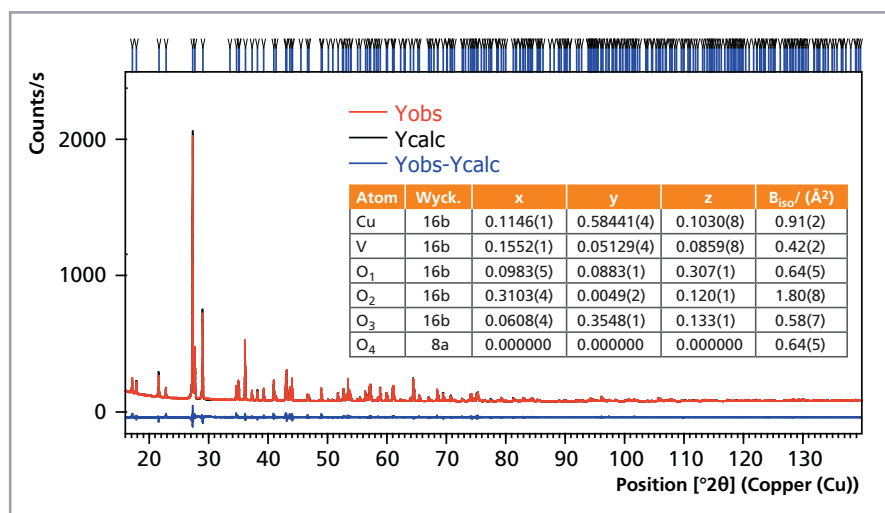
Whatever project you are working on, the fast acquisition of phase information from your sample in question can be crucial for your research. Just collect X-ray diffraction data with AERIS and subsequently employ the HighScore suite to obtain a wealth of crystallographic information.

HighScore, PANalytical's most comprehensive powder diffraction software, supporting all known search-match databases for phase identification. This information can be used for:

- Polymorph screening
- Monitoring chemical reactions
- Easy identification of intermediates
- Geological exploration
- Monitoring of impurities
- Education



The HighScore Suite



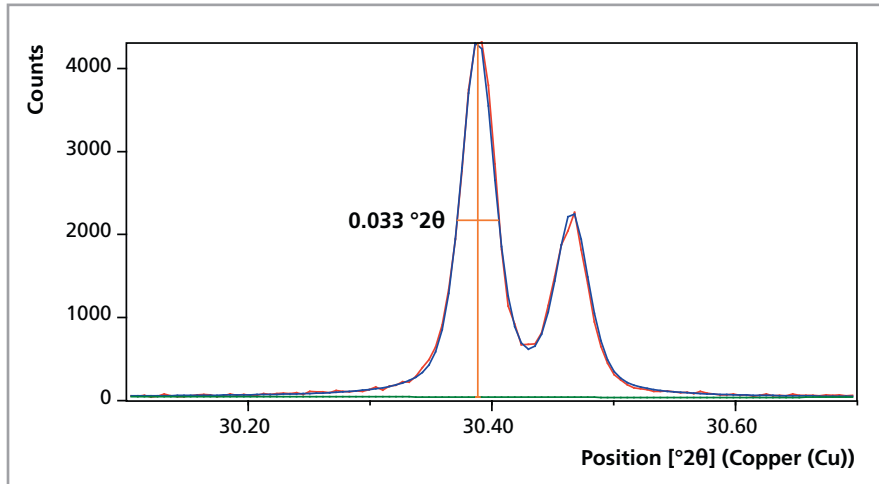
The example of blossomite shows the excellent capabilities of AERIS to extract structural parameters including B_{iso} parameters.

Rietveld refinement of blossomite (α -Cu₂V₂O₇) collected on AERIS diffractometer



Best-in-class performance

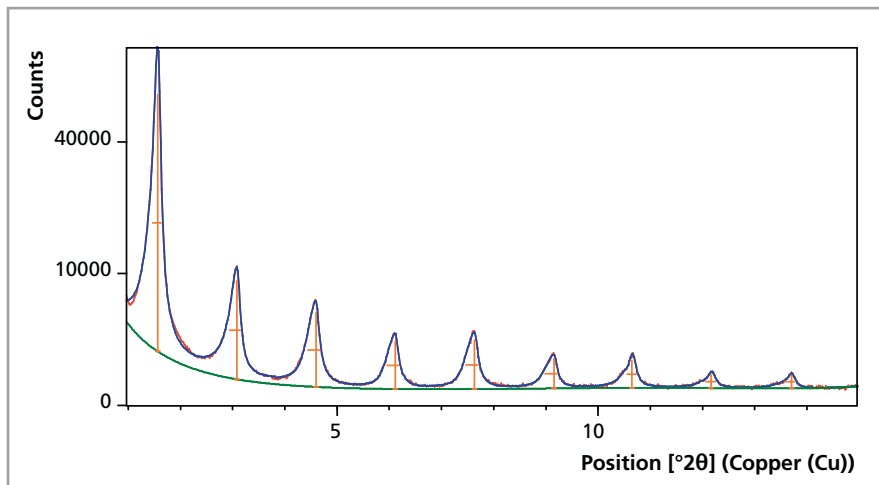
Resolution as never seen before on a benchtop X-ray diffractometer



LaB₆ measurement showing a full width half maximum value of <0.04° 2θ. These are values never seen on a benchtop XRD.

Diffraction measurement of LaB₆

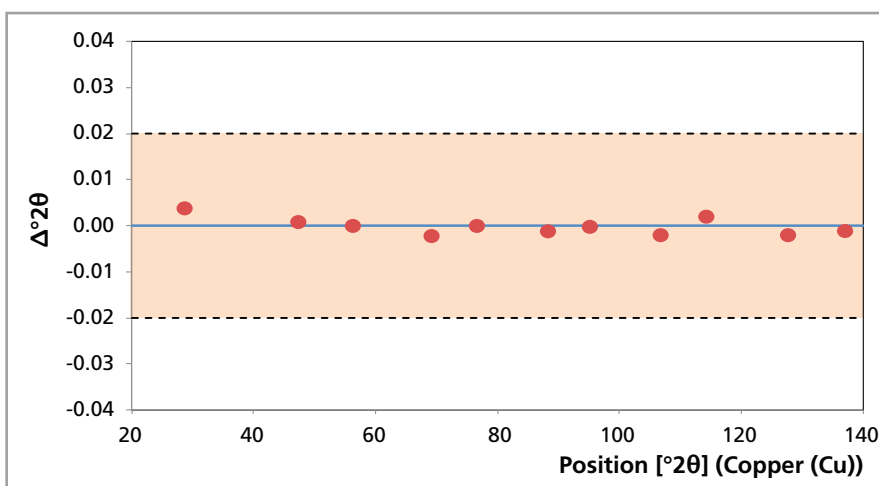
Excellent low-angle performance



Silver behenate showing the excellent low-angle performance of the system.

Diffractogram of silver behenate

Superior linearity



With a 2θ linearity well below $\pm 0.02^\circ 2\theta$, the peak position accuracy of the Research edition of Aeris is the best on the XRD benchtop market.

2θ linearity graph of a silicon reference standard

About PANalytical

PANalytical's mission is to enable people to get valuable insight into their materials and processes. Our customers can be found in virtually every industry segment, from building materials to pharmaceuticals and from metals and mining to nanomaterials. The combination of our software and instrumentation, based on X-ray diffraction (XRD), X-ray scattering, X-ray fluorescence (XRF) and near-infrared (NIR) spectroscopy as well as pulsed fast thermal neutron activation (PFTNA), provides our customers with highly reliable and robust elemental and structural information on their materials and is applied in scientific research and industrial process and quality control.

PANalytical employs over 1,000 people worldwide. The company's headquarters are in Almelo, the Netherlands. Fully equipped application laboratories are established in Japan, China, the US, Brazil, and the Netherlands. Supply and competence centers are located on two sites in the Netherlands: Almelo (X-ray instruments) and Eindhoven (X-ray tubes), in Nottingham, UK (XRF applications and standards), in Quebec, Canada (fusion sample preparation) and in Boulder CO, US (near-infrared instruments). A dedicated research activity is located on the campus of the University of Sussex in Brighton (UK).

PANalytical is active in all but a few countries of the world. This worldwide sales and service network ensures unrivalled levels of customer support.

The company is certified in accordance with ISO 9001 and ISO 14001.

Visit www.panalytical.com for more information about our activities.

PANalytical is part of Spectris plc, the productivity-enhancing instrumentation and controls company.



Expertise

We take care of your analytical challenges

Industry's largest pool of specialists to create analytical solutions that are crucial for your processes and add value to your business and activities.

- On-site training
- Training courses
- Performance optimization and validation
- Analysis services and customized reference materials
- Multi-laboratory standardization

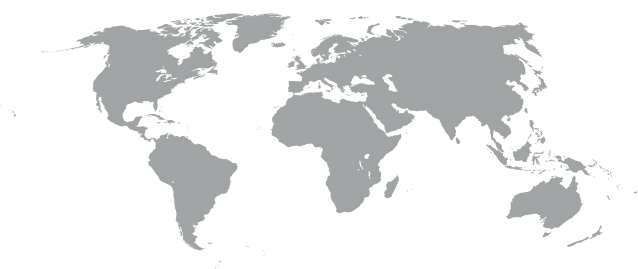
Support

Support for a life time

Worldwide network of experienced engineers to ensure rapid response and maximum uptime.

- Phone and remote support
- Preventive maintenance and check-ups
- Flexible Care Agreements
- Performance certificates
- Hardware and software upgrades
- Local presence
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