

XRD

ADVACAM

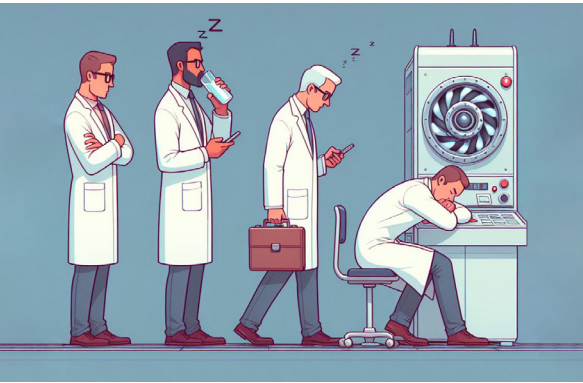
Imaging the Unseen



JUMP OVER THE TOP 4 HURDLES IN XRD

Welcome photon-counting detectors.
Welcome cost-reducing technology for faster and clearer X-Ray Diffraction.

JUMP OVER THE TOP 4 HURDLES IN XRD



1 MEASUREMENTS TOO SLOW?

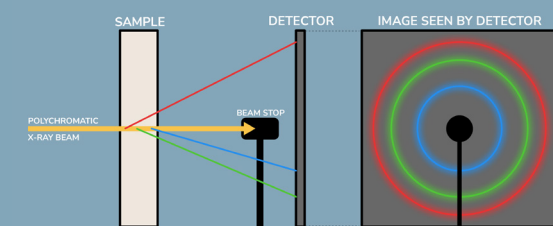
With traditional diffractometers, the movement of the X-ray tube and detector must be halted at each angle. Our detectors collect data continuously on the fly. No need for start-stop delays. Additionally, the improved Signal-to-Noise Ratio (SNR) enables the collection of the same quality results up to an order of magnitude faster.



2 SIGNAL LOST?

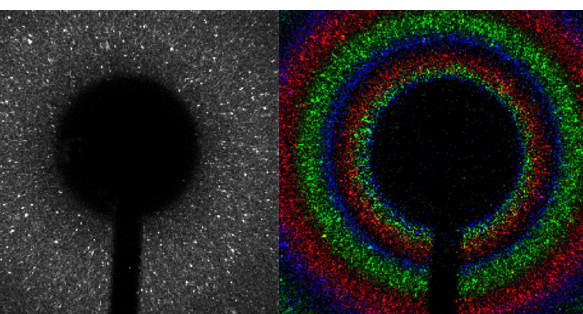
One tiny peak can be the key to distinguishing your sample's properties: Ore quality or the mechanical features of an alloy. These peaks will no longer be overlooked. The results are crystal clear thanks to a 30x reduced background and a 10x better signal-to-noise ratio (SNR).

NON-DESTRUCTIVE TRANSMISSION XRD



3 SAMPLES DESTROYED?

Yes, the traditional powder XRD is a destructive method. But what if your sample is a precious industrial component? With our QUAD model carrying 4x larger sensitive area even thick, heavy samples can be inspected non-destructively. Using the transmission XRD method, our cameras operate on a broad range of energies (3 – 150 keV). This allows X-rays to pass through your sample harmlessly.



Si powder
Common detector

Si powder
ADVACAM detector

4 TIRED OF BLACK & WHITE?

Instead of taking a single diffraction image, our detectors can accumulate all X-ray wavelengths into one single picture. We record about 150 images at once. This enhancement makes our „color“ XRD operating two orders of magnitude faster than conventional XRD systems.

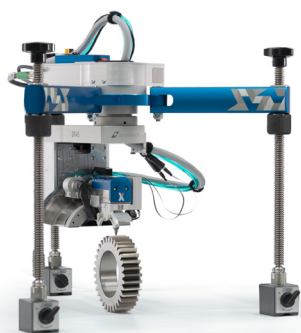
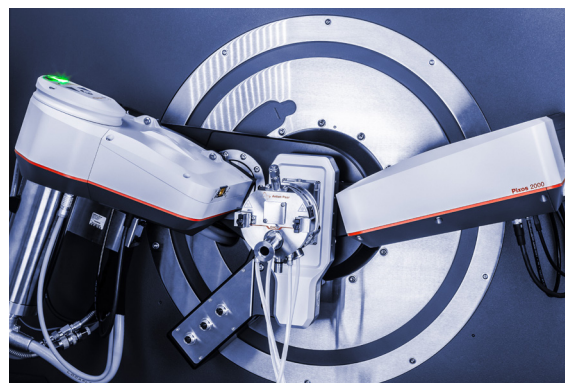
ADVACAM
Inside

“ADVACAM INSIDE”

Anton Paar | XRDynamic 500

Automated Multipurpose Powder X-Ray Diffractometer

The evacuated Pixos™ detection units feature solid-state hybrid pixel detectors from ADVACAM based on the Timepix3 chip developed by CERN. Anton Paar: *“The measurement modes offer unparalleled performance and measurement speed for all powder XRD applications.”*



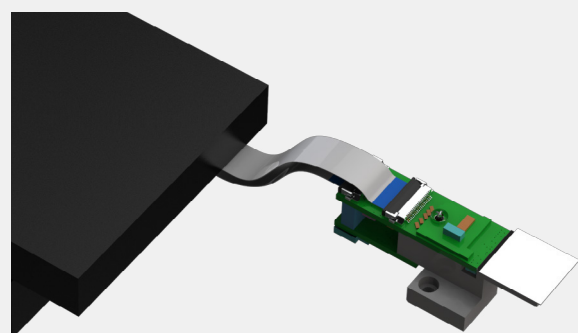
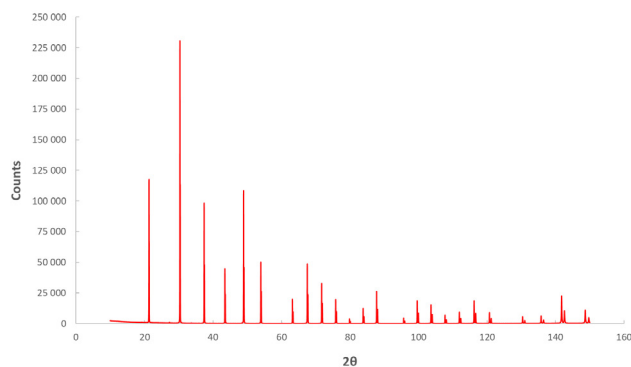
Stresstech | Xstress DR45

Newest Diffractometer for residual stress measurements

Xstress DR45 is a new generation of X-ray diffractometers that deliver high quality data using ADVACAM photon-counting technology. The speed and accuracy of the Xstress DR45 takes residual stress measurements beyond the laboratory and into the production line.

Standard sample

An example of the NIST SRM 660c (LaB₆ powder) sample, measured with Anton Paar's XRDynamic 500. The superior quality is obvious. The Standard Reference Material (SRM) consists of lanthanum hexaboride powder intended for the calibration of X-ray diffraction equipment with respect to the line position as a function of 2θ angle.



Ready for integration

ADVACAM detectors can be seamlessly integrated into any custom scientific or industrial setting. Our model portfolio includes FLEX variants, which are equipped with an ultra-miniaturized Timepix chip, connected to the electronic board via a flexible cable.



	MiniPIX TPX3	AdvaPIX TPX3	AdvaPIX TPX3 QUAD
Readout Speed:	2.35 Million hits/s	38 Million hits/s	47 Million hits/s
Pixel Pitch:	55 μm	55 μm	55 μm
Number of Pixels:	65 536	65 536	262 144
External Hardware Trigger:	Not supported	Supported	Supported

Sensor configurations for all devices

Parameter	Si				CdTe		Units
Thickness	100	300	500	1000 (custom)	1000	2000 (custom)	μm
Energy resolution in ToT mode (σ @ 60 keV)	1.2 - 2.6	1.3 - 2.7	1.4 - 3.5	1.7 - 3.6	2.8 - 5.4	2.9 - 8.3	keV
Energy resolution in ToT mode (σ @ 122 keV)	-	-	-	-	3.4 - 6.0	4.5 - 9.9	keV

Valid for standard calibration and temperature-stabilized device at 22°C. Premium calibration and/or chip class can achieve even better performance. For more information about customized products, contact us via our website www.advacam.com

Lower noise, higher SNR

Standard detector vs. ADVACAM photon-counting

- Background reduced 29 times
- SNR from 1.3 to 12

- Cu K alpha radiation
- Fe ore sinter sample
- 5 minute measurement time

