XRD: X-ray diffraction

X-ray diffraction is analytical method based on inspection of crystalline structure of samples. Applications:

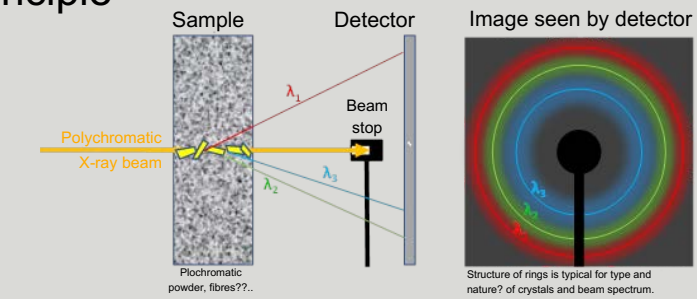
- Metallurgy, Mineralogy
- Powders, Pigments, Polymers
- Surface layers
- Strain mapping

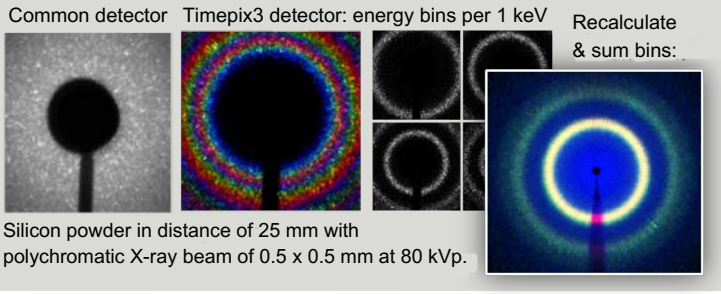
Detector is a key

The traditional XRD uses monochromatic X-rays which make the apparatus large and slow. ADVACAM's spectral camera based on Timepix3 chip with high resolution makes it fast and compact:

- The high resolution detector can be placed close to the sample covering large solid angle => fast data accumulation.
- The polychromatic X-ray beam can be used with ADVACAM's energy dispersive detectors => system is faster, smaller, much less complex.
- Broad energy range (3 - 150 keV): Even heavy samples can be transmitted (stainless steel, heavy metals and minerals).

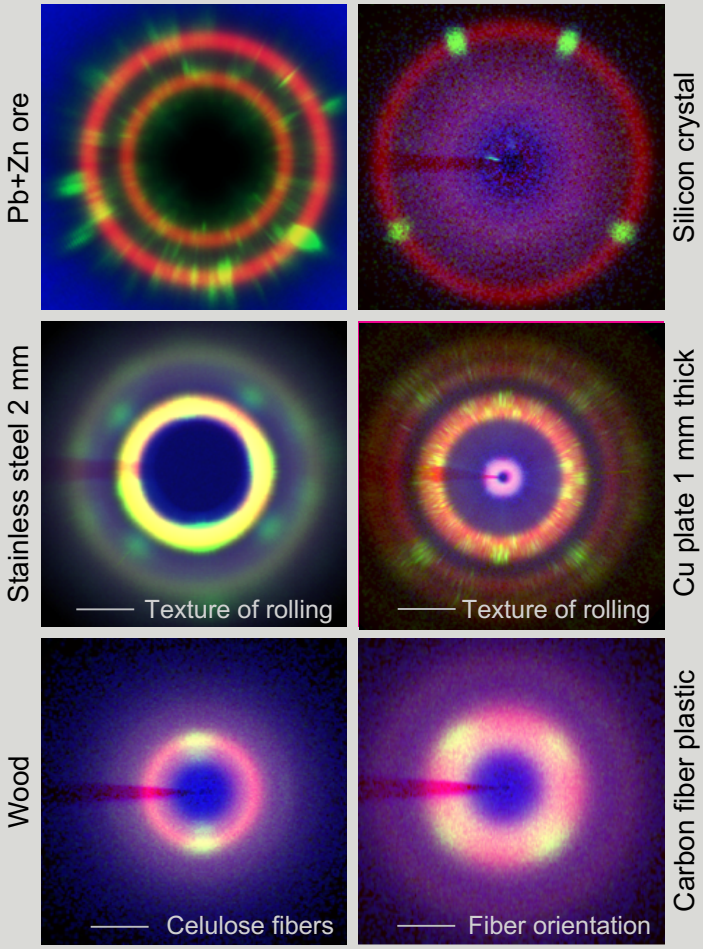
Principle





Silicon powder in distance of 25 mm with polychromatic X-ray beam of 0.5 x 0.5 mm at 80 kVp.

Examples



SUITABLE CAMERAS

	MINIPIX®TPX3	ADVAPIX®TPX3
Readout chip type	Timepix 3	Timepix 3
Sensor material	Si or CdTe	Si or CdTe
Pixel size	55 x 55 um	55 x 55 um
Readout speed	2.35 Million hits/s	40 Million hits/s
Interface	USB 2.0 (High-Speed)	USB 3.0
Dimensions	80 x 21 x 14 mm	125 x 79 x 25.5 mm
Weight	30 g	503 g

ADVACAM