



## ● D8 ENDEAVOR Metals

X-ray powder diffraction (XRD) is a widely used analytical method for the process and quality control of making steel, the by far most important metal produced.

To support effective mining iron ore and gangue minerals can easily and most accurately be quantified by TOPAS Rietveld analysis. This helps in grade estimation of the ore, and allows improving the beneficiation of iron ore. Similarity measures by cluster analysis with DIFFRAC.EVA may help to map out grade blocks in the ore deposit without the need for detailed data evaluation.

Knowing the exact FeO concentration in the raw material is key to cut the greenhouse-gas emission of iron plants. The FeO amount can directly be calculated from the stoichiometry and concentration of the minerals. These

values determined by rapid XRD makes it a very fast alternative to titration. Furthermore, mineralogical phase analysis by XRD is used to determine important process parameters in sinter plants or during the direct reduction of iron (HBI, DRI). Besides others those parameters are content of FeO, total iron, metallic iron, and basicity.

For setting the strength and other mechanical properties of steel the content of austenite (or gamma iron) is crucial. DIFFRAC.DQUANT qualifies the amount of austenite accurately and according to ASTM 950 from XRD data.

- Iron ore and gangue minerals, mill scales
- Sinter, HBI, DRI, refractories, slags
- Retained austenite



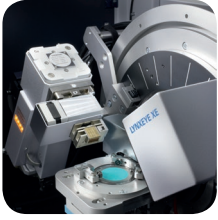
On-site ready



Dust protected



Eco



LYNXEYE XE detector



Sample magazine with 66 positions

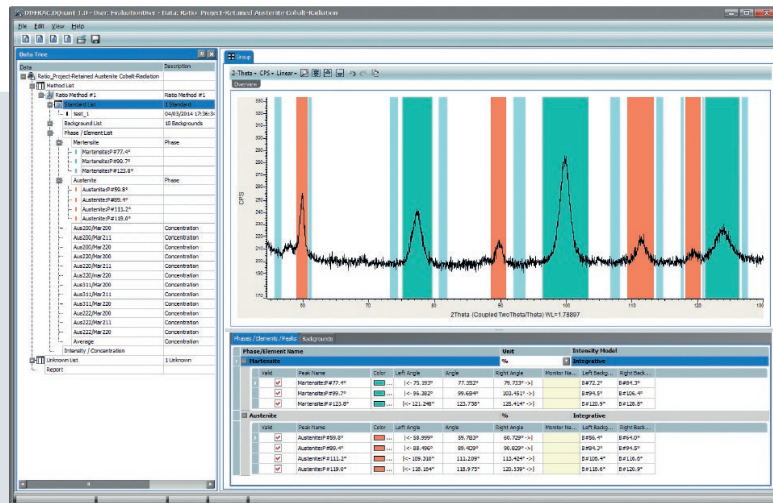


TOPAS application package

## Features

- LYNXEYE XE linear detector
  - Highest speed to reduce sample turnaround and increase throughput
  - Ultra-low background for lowest limits of detection (LOD) and quantification (LOQ)
- Dynamic Beam Optimization (DBO)
  - Variable divergence slit and anti-scatter screen for best data quality
  - User intervention-free application switch of the instrument
- Optimal wavelength for every application
  - Co, the ideal wavelength to minimize micro-absorption effects on quantitative analysis
  - Co, Cr, or Mo for retained austenite determination
- Environmental optimized instrument options
  - Harsh Environment – Extended operation conditions for dust, high operational temperatures and high altitudes at highest power (3 kW)
  - ECO – Remote location operation without need for external cooling water at 1 kW
- Analytical software and application packages
  - DIFFRAC.EVA for minerals identification, cluster analysis, and semi-quantitative analysis
  - DIFFRAC.DQUANT for retained austenite determination according to ASTM E 975 or SAE SP-453
  - DIFFRAC.TOPAS and iron ore application package for quantitative mineralogy using the Rietveld method

Definition of single peaks in DIFFRAC.DQUANT for the determination of retained austenite by the ratio method.



### • Bruker AXS GmbH

Karlsruhe · Germany  
 Phone +49 721 50997-0  
 Fax +49 721 50997-5654  
 info.baxs@bruker.com

[www.bruker.com](http://www.bruker.com)