High-throughput Synchrotron Powder Diffraction measurments for mineralogical characterisation

Stenman Minerals Ab offers consultancy and mineralogical analysis for industry and academia on geo-, material- and environmental sectors where the mining industry plays the largest role. Company also provides various kinds of sample preparation- and laboratory equipment and preservation solutions for sensitive scientific and museum samples.

Quantitative phase analysis based on X-ray Powder Diffraction (XRPD) is one of the key services of Stenman Minerals Ab. Information extracted from the analysis is not limited on the

proportions of the phase only. On the contrary structural state and chemical variability can be derived from the data too. In mining sector huge number of samples (>100'000) are routinely collected for analysis to guide the production and prospecting new exploitable deposits.

ANAXAM and Stenman Minerals work with a joint project together for building a tailor-made sample high-throughput setup utilizing Synchrotron Radiation X-ray Powder Diffraction (SR-XRPD). High-resolution data collection, sample- change and identification is carried out by fully automatic manner within few seconds. Therefore, even hundreds of thousands of samples can be measured promptly, precisely, and accurately. After manual calibration of certain set of phases also the data can be refined automatically.

There is no time loss in exchanging the samples and errors can also be reduced as samples will be recognized and registered to the dedicated pattern automatically. As the total experimental time is reduced and the data quality improved, Stenman Minerals will benefit from using the high-throughput system for the characterization of large amounts of samples for its customers.

For this customer project, ANAXAM used the MS beamline at the Paul Scherrer Institute.

> “The level of speed, precision and accuracy on SR-XRPD data collection cannot be reached on any other method. The cooperaton with ANAXAM has taken powder diffraction to the truly next level.”

Jarkko Stenman, COO
— Stenman Minerals Ab.

https://www.anaxam.ch/