MINERAL LIBERATION ANALYSIS OF MINERAL RESOURCES **

Prof. Dr. Bernhard SCHULZ

<u>Work load:</u> 30h Theory (lectures), 60h Self-studies including preparation of report with protocol.
<u>Number of credits:</u> 3 ECTS
<u>Course code:</u> MINLI. BA.HPT.Nr / Examination number: 33208

► *Course contents:*

Methods of automated SEM analysis, evaluation software, data extraction, interpretation, writing of reports for mineral processing engineers.

► *Intended Learning Outcomes:*

Evaluation of metal ores and processed metal ores by automated mineral liberation analysis (MLA) by Scanning Electron Microscope (SEM). Set-up and speciation of automated measurements by SEM. Numerical and graphical assessment of database files produced from automated SEMmeasurements.

► *Prerequisites and co-requisites:*

<u>Recommended:</u>
Knowledge of analytical methods based on electron beam instruments

► *Planned learning activities and teaching methods:*

Presentation of methods of Mineral Liberation Analysis (MLA) by Scanning Electron Microscope (SEM). Participants evaluate data by using their own Laptops. / Exercises (2 SWS)

► *Mode of delivery (face-to-face; distance-learning):*

- Theoretical courses are given by modules of 2 hours.
- Face-to-face discussions with young researchers in the field. Supportive learning during practical lessons by working on datasets both in group and individually.

► *Recommended or required readings:*

Gu, Y. (2003). Automated Scanning Electron Microscope Based Mineral Liberation Analysis. Journal of Minerals and Materials Characterization & Engineering, vol. 2, no. 1: 33–41.; Fandrich, R., Gu, Y., Burrows, D. & Moeller, K. (2007). Modern SEM-based mineral liberation analysis. International Journal of Mineral Processing, 84, 310-320. Types of Teaching: S1 (WS): Mineral Liberation Analysis (MLA) of Mineral Resources

► *Assessment methods and criteria:*

For the award of credit points it is necessary to pass the module exam.
The module exam contains:
AP: Report with protocol on the evaluation of a Mineral Liberation Analysis by Scanning Electron Microscope (SEM)

The Grade is generated from the examination result(s) with the following weights (w):
AP: Report with protocol on the evaluation of a Mineral Liberation Analysis by Scanning Electron Microscope (SEM) [w: 1]

► *Contribution to EIT's Overarching Learning Outcomes:*

(EIT OLO1, OLO5 and OLO6): This course requires and includes the knowledge of analytical methods based on electron beam instruments. Students are trained in the writing of reports for mineral processing engineers. Equally they learn how to evaluate metal ores and process metal ores by automated mineral liberation analysis.