



TUBAF

Die Ressourcenuniversität.
Seit 1765.

GEOMETALLURGY LABORATORY

**Institut of Mineralogy
Economic Geology and Petrology**

Brennhausgasse 14
09599 Freiberg
Room EG. 27



SEM-BASED AUTOMATED MINERALOGY MINERAL LIBERATION ANALYSER (MLA)

1. MLA measurement and data acquisition

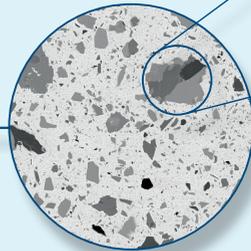
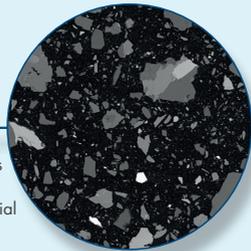
FEI Quanta 600F

BSE-scan

Background removed



Epoxy mounts with crushed sample material



sample types:
drillcore, hand specimen, epoxy mounts with crushed material or rock pieces, thin or thick section

2. Image processing and data conversion

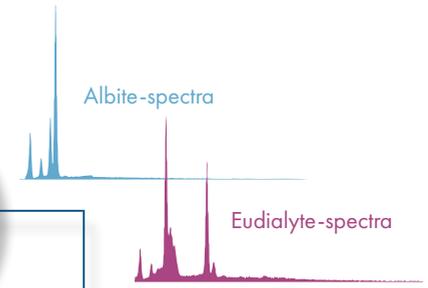
Segmentation and grain
X-ray analysis

EDX-spectra



Albite-spectra

Eudialyte-spectra



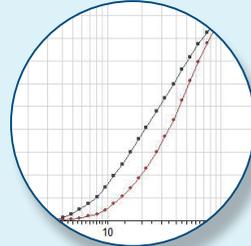
Comparison of measured spectra
and spectra in mineral reference list

3. Dataview: reporting

Final reports:
graphes and tables

Sample
database

Classified particle
image



Mineral	WT%	Area%
Eudialyte	13.09	12.75
Albite	31.11	33.56
Leakeite	30.78	27.97
Nepheline	12.37	13.44
others	12.66	12.27



SEM-BASED AUTOMATED MINERALOGY MINERAL LIBERATION ANALYSER (MLA)

1. MLA measurement and data acquisition

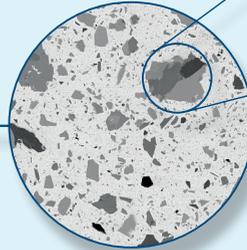
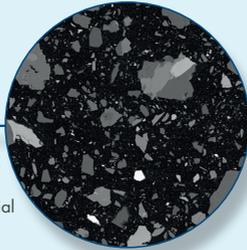
FEI Quanta 600F

BSE-scan

Background removed



Epoxy mounts with crushed sample material



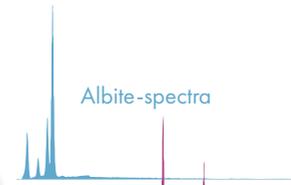
Segmentation and grain
X-ray analysis

2. Image processing and data conversion

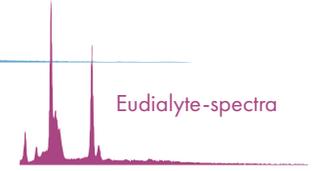
EDX-spectra



Albite-spectra



Eudialyte-spectra



Comparison of measured spectra
and spectra in mineral reference list

sample types:

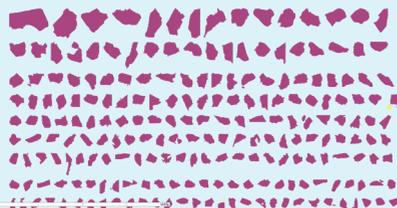
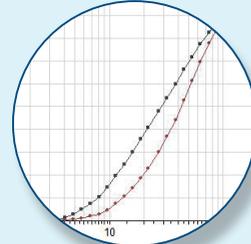
drillcore, hand specimen, epoxy mounts with crushed material or rock pieces, thin or thick section

3. Dataview: reporting

Final reports:
graphes and tables

Sample
database

Classified particle
image



Mineral	WT%	Area%
Eudialyte	13.09	12.75
Albite	31.11	33.56
Leakeite	30.78	27.97
Nepheline	12.37	13.44
others	12.66	12.27



What can be analysed?

- all kind of rocks
- concrete
- sediments
- heavy mineral concentrates
- industrial material e.g. from recycling

Requirements

- loose material need to be fixed in epoxy resin and polished
- polished thin or thick section of all kind of rocks
- material needs to be stable under the electron beam and in vacuum

Results

- mineral distribution maps
- modal proportions of single minerals or phases
- particle and grain size, -shape and association information
- degree of liberation and much more

more information



Contact:

Sabine Gilbricht
Prof. Bernhard Schulz
+49 (0)3731 – 392255
Sabine.Gilbricht@mineral.tu-freiberg.de
Bernhard.Schulz@mineral.tu-freiberg.de