



Agenda EDS User School

Duration: 3 days
Location: Bruker Nano, Berlin Headquarter, Schwarzschildstr. 12, 12489 Berlin
Entrance: Schwarzschildstr. 8, 2nd floor, Room 329
Time frame: 9.30 – 16.30 (lunch break 12.30 – 13.30)
Instructors: Dr. Tobias Salge, Dr. Jana Berlin, Andi Käppel

First day

- 9:30am Principles of Electron Beam Microanalysis**
Beam-specimen interactions
Origin of Bremsstrahlung and characteristic peaks
Moseley's law
Characteristic peaks: K-, L-, and M-series
Spatial resolution - and excitation range in EDS analysis
Energy resolution
- 10:30am System parameters**
EDS and SEM - fundamentals
Detector and signal processing
Signal processing unit settings
Microscope settings (accelerating voltage, tilt, working distance)
Artifacts (escape, tail, shelf, shift and pile-up)
- 11am Spectra acquisition (part I)**
Energy channel calibration (Mn K α resolution)
Identification (manually, finder, automatically)
Options (sputtering correction, online quantification)
Correction possibilities (tilt, Duane/Hunt limit)
Spectra comparison (manually, automatically)
Spectra arithmetic
Storage of spectra data (storage of single files, project management)
- 1:30pm Spectra acquisition (part II)**
Method editor
Identification via deconvolution
- 3pm Exercices**
Element identification (Minerals)

Second day

- 9:30am** **Quantification (theory)**
Identification
Bremsstrahlung (calculation)
Deconvolution models (Bayes – Fit)
Quantification (standardless vs. standardbased)
Correction methods (ZAF and $\Phi(\rho z)$)
Solid samples – rough surfaces
Thin layers
Cliff-Lorimer quantification (TEM)
- 11am** **Quantification (practice)**
Generation of user specific analysis routines
Identification and Quantification (Cr-Ni-steel)
- 1:30pm** **Object analysis**
Automatic multi-point analysis (regular and statistical)
Analysis of rectangles, ellipses and polygons

Linescan (qualitative, quantitative)
- 3pm** **Mapping, quantitative mapping and HyperMapping**
Application, differences
Automatic phase analysis
Maximum Pixel Spectrum
Drift correction
Phase diagram presentation

Third day

- 9:30am** **Data storage and report function**
Generation of user specific templates
- 10am** **Typical mistakes during EDS analysis**
Specific user questions
- 11am** **Training exercises with various samples (I)**
- 1:30pm** **Training exercises with various samples (II)**
- 3pm** **Training exercises with various samples (III)**

Handout of certificates
- Per request:** **Special functions**