Agenda EDS User School

Duration: 3 days
Location: Bruker Nano GmbH, Am Studio 2D, 12489 Berlin-Adlershof, Germany
Time frame: 9:30am – 4:30pm (lunch break 12:30 – 1:30pm)

Day 1

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

11am **System parameters**
EDS and SEM - fundamentals
Detector and signal processing
Signal processing unit settings
Microscope settings (accelerating voltage, tilt, working distance)
Artefacts (escape, tail, shelf, shift and pile-up)

12:30-1:30pm **Lunch break**

1:30pm **Spectra acquisition (part I)**
Energy channel calibration (Mn Kα 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)

Spectra acquisition (part II)
Method editor
Identification via deconvolution

3pm **Exercices**
Element identification (Minerals)

Day 2

9am	**Quantification (theory)** Identification, Bremsstrahlung (calculation), Deconvolution models (Bayes – Fit), Quantification (standardless vs. standardbased), Correction methods (ZAF and Φ(ρ 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)
12:30-1:30pm	**Lunch break**
1:30pm	**Training exercises on the SEM** **Object analysis** Automatic multi-point analysis (regular and statistical) Analysis of rectangles, ellipses and polygons **Line scan** (qualitative, quantitative)

Day 3

9am	**Mapping, quantitative mapping and HyperMapping** Applications of different Mapping modes, Maximum Pixel Spectrum, Automatic phase analysis Drift correction, Phase diagram presentation **QMap exercise**
11:30am	**Training exercises on the SEM** **Mapping**
12:30-1:30pm	**Lunch break**
1:30pm	**Typical mistakes during EDS analysis** & user questions
2:15pm	**Training exercises on the SEM** **Mapping**

Hand out of certificates

Per request:	**Special functions**