



Bruker Nano GmbH

## Agenda EDS User School

Duration: 3 days  
Location: Bruker Nano, Berlin  
Time frame: 9:30 am – 4:30 pm (lunch break 12:30 – 1:30)

### 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)  
Artefacts (escape, tail, shelf, shift and pile-up)
- 1:30 pm Spectra acquisition (part I)**  
Overview of Esprit software  
Energy channel calibration (Mn-K $\alpha$  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)
- 2:30pm Spectra acquisition (part II)**  
Method editor  
Identification via deconvolution
- 3:00pm Exercices**  
Element identification (Minerals)

**Second day**

<b>09:00 am</b>	<b>Quantification</b> Identification Bremsstrahlung (calculation) Deconvolution models (Bayes – Fit) Quantification (standardless vs. standards based) Correction methods (ZAF and $\Phi(\rho z)$ ) Solid samples – rough surfaces Thin layers Cliff-Lorimer quantification (TEM)
<b>11:00 am</b>	<b>Exercises</b> Generation of user specific analysis routines Identification and quantification (Cr-Ni-steel)
<b>01:30 pm</b>	<b>Object analysis</b> Automatic multi-point analysis (regular and statistical) Analysis of rectangles, ellipses and polygons Linescan (qualitative, quantitative) <b>Data storage and report</b> Generation of user specific templates
<b>02:30 pm</b>	<b>SEM practice</b> Data acquisition Quantification and method evaluation
<b>Third day</b>	
<b>09:00 am</b>	<b>Typical mistakes during EDS analysis</b> Specific user questions
<b>10:30 am</b>	<b>Intensity map, quantitative map and HyperMap</b> Application, differences Automatic phase analysis Maximum Pixel Spectrum Drift correction Phase diagram presentation
<b>11:00 am</b>	<b>Hypermap, Qmap exercise</b>
<b>01:00 pm</b>	<b>SEM practice</b> QMap, HyperMap and advanced mapping options Analysis of customer samples
<b>04:00 pm</b>	Handout of certificates
<b>Per request:</b>	<b>Special functions</b>