SEM/EDX

Group 3
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Introduction

• Sample is bombarded with electrons from electron gun and signals are generated through detection of
  • backscattered electrons
  • secondary electrons
  • X-rays
Introduction

• The topographic pictures is generated by analysis of the secondary electrons

• The backscatter is generating a picture based on the mass of the elements

• X-Ray is used for identifying the elemental composition and gives the spectrum
Introduction

• Surface sample
  • Particle shape, size and surface structure (topography)
  • Particle/coating surface composition

Particles from the sample are placed on a sample holder and coated with conducting carbon layer.
Introduction

• Cross-sectional sample
  • Particle/coating cross-sectional size, structure and composition

Particles are placed in a container and covered in epoxi resin. Once the resin is solid a cross sectional cut is made through the sample and the exposed surface is polished and coated with carbon.
Examples of results

• Back-scatter picture of bed sample in epoxi

3BS 500x (1)

15 | 65535

50 µm
Examples of results

- Spectrum
Examples of results
Examples of results

• Line analysis
Conclusions

Upside
- High resolution and magnification (nm)
- Surface sensitive
- Structure and composition dependent on location
- Small sample size
- Mechanical intact

Downside
- Quantification of whole sample
- Surface sensitive
- No quantitative composition, only qualitative
- Sample not usable for other methods
- Sensitivity (species and concentration)
- Oxides/oxygen
- Overlapping peaks