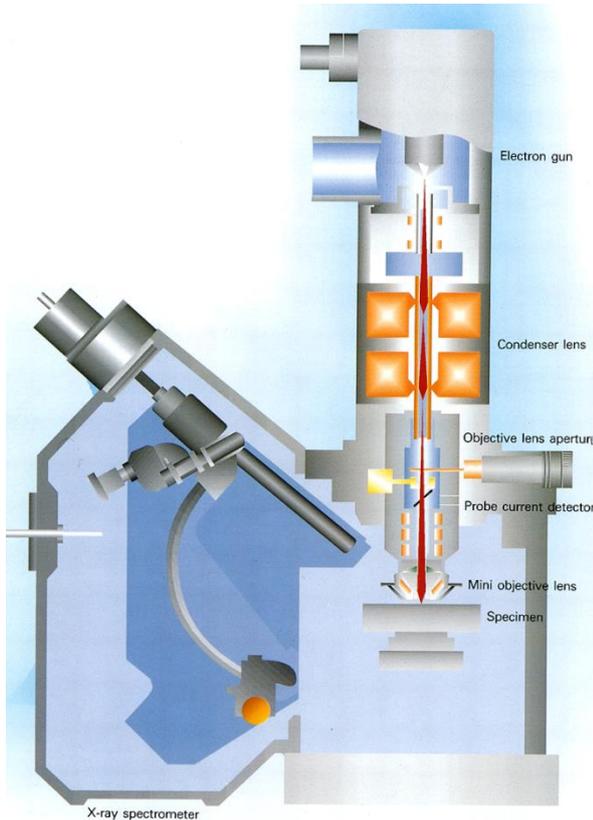


# Damage and material analysis

## Electron beam microanalysis

Electron beam microanalysis is used for quantitative elemental analysis of solids in the micro range. Qualitative and quantitative point analyses as well as concentration profiles (line scans) and area analyses (element distribution images) can be carried out.)



Principle of electron beam microanalysis

### How electron beam microanalysis works

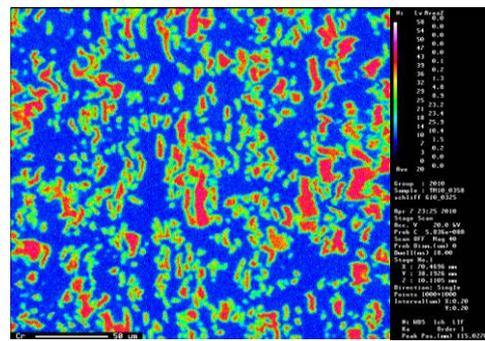
A finely bundled electron beam generates X-rays on the object under examination. The X-ray wavelengths are characteristic for sample elements. By analyzing the X-rays for wavelengths and intensities, the element concentrations can be determined with high accuracy.

### Some fields of application

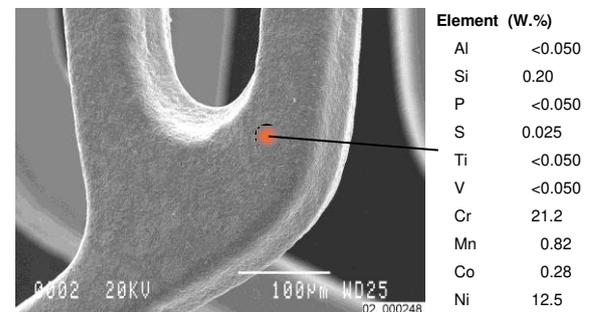
- Chemical composition of very small samples
- Local analysis in the micrometer range (phases, inclusions, ...)
- Composition of layers (plasma sprayed layers, galvanic layers, oxide layers, etc.)
- Trace analysis

### Advantages of this method

The method allows accurate chemical analyses of all kinds of materials with high local resolution (1-2 μm). All elements including the "light" elements starting from atomic number 5 (e.g. O, C or N) can be analysed. The detection limit is 10-500 mg/g (ppm) depending on the element and sample.



Elemental distribution image of the element nickel in a sintered sample of a nickel/chromium alloy



Full quantitative chemical analysis of a very small sample. The diameter of the analysed area is about 5 μm

### Delivery time

The delivery time for electron beam microanalyses is usually 2-3 working days. For more demanding analyses a delivery date will be agreed upon in consultation.

