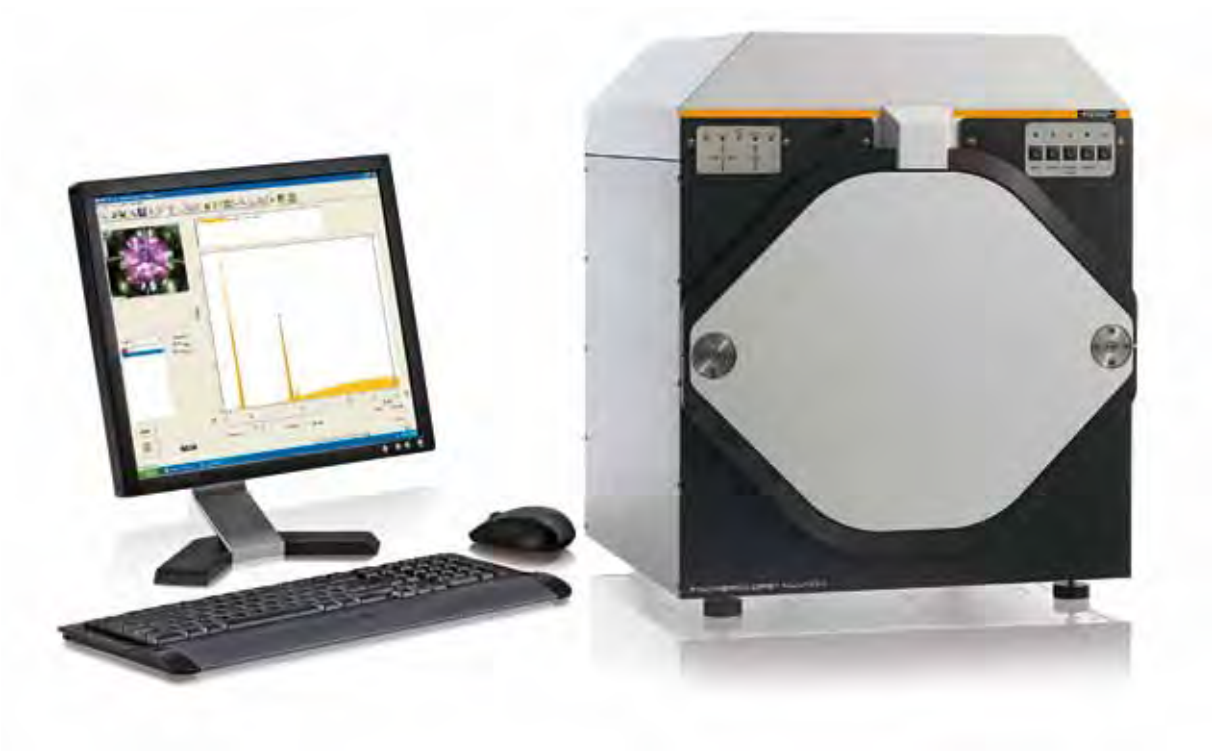
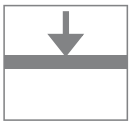
FISCHERSCOPE® X-RAY XUV®





MEASUREMENT FROM TOP TO BOTTOM

The FISCHERSCOPE X-RAY XUV is equipped with a large measurement chamber that can be evacuated. With its large-area silicon drift detector, the XUV can detect fluorescence radiation with low energy down to about 1 keV, specifically enabling measurement of the elements Na and Mg as well as the L-radiation of Zn, Cu and Ni. Due to the high count rates possible when using large apertures, very small repeatability precision values and low detection limits can be achieved, making the XUV suitable for measuring the thinnest of coatings, as well as for trace analysis.

Optimal measuring conditions can be created for every measurement using the exchangeable apertures and primary filters. The measurement position is shown in the video image during the measurement. With its spacious and easily accessible measurement chamber and the programmable XYZ-stage, this instrument accommodates flat, plane objects as well as specimens with complex shapes. Serial tests and measurements of coating thickness or element distribution are straightforward and easy. A laser pointer acting as a positioning aid further facilitates the quick orientation of the samples.

Soil specimen, ashes, minerals

Gemstone: Matrix Al_2O_3, SiO_2

Due to its universal design and the expanded measurement capabilities provided by the vacuum chamber, the FISCHERSCOPE X-RAY XUV measurement system is the ideal instrument not only for research and development but also for process qualifying and laboratory applications.

Examples from practical applications

Type, origin and authenticity are essential features for assessing the value of a precious stone, and analysis of the stone's matrix is crucial for their determination. As a rule, this is based on Al or Si oxide with accompanying elements such as Mg or Na. In addition, trace elements such as Cr, Fe or Ga are important. The XUV allows for the analysis of the entire spectrum of necessary elements.

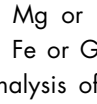
Thin Al and Si or Al oxide and Si oxide coatings have become increasingly important in various areas of application. Here, the measurement of coating thickness under vacuum provides significant improvements. Using the XUV, repeatability precisions of only a few nm can be achieved for these coatings.

Characteristics

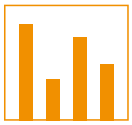
- Micro-focus X-ray tube with Rh anode and beryllium window, optional W- or Mo-anode. Maximum operating conditions: 50 kV, 50W
- Peltier-cooled silicon drift detector as the X-ray detector
- Aperture: 4-x exchangeable, Ø 0.1 mm to Ø 3 mm
- Primary filter: 6-x exchangeable
- Programmable XYZ-stage
- Video camera for optical observation of the measurement location along the axis of the primary X-ray beam. Crosshairs with calibrated scale (ruler) and display of the measurement spot
- Measurement in vacuum, in atmosphere or with He purge

Typical fields of application

- Measurement of light elements
- Measurement of thin coatings and trace analysis
- General materials analysis and forensics
- Non-destructive gemstone analysis
- Photovoltaic industry



COATING THICKNESS



MATERIAL ANALYSIS

Wafer: Al/Si-Wafer

Gemstones: trace elements Cr, Fe, Ti, Ga,...