EDAX Smart Insight

AMETEK® MATERIALS ANALYSIS DIVISION

Product Bulletin - Micro-XRF

Orbis Micro-XRF Elemental Analyzer

- Non-destructive air or vacuum analysis for inorganic elements
- Minimal sample preparation - no sample coating necessary
- Improved sensitivity for heavier elements compared to SEM/EDS
- Analysis with multiple spot sizes down to 30 µm
- Coaxial video/X-ray design eliminating beam obstruction and shadowing
- Large area SDD option for improved sensitivity
- Sample viewport option provides quick view of sample orientation

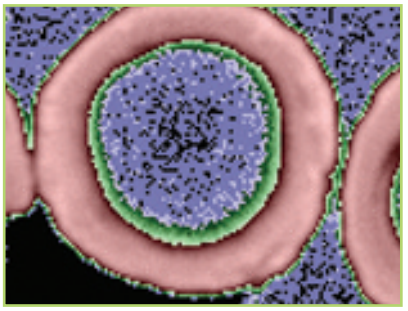
edax.com

The Orbis micro-XRF elemental analyzer is flexible and easy to use, offering outstanding performance across the complete range of micro-XRF applications. With Orbis, users can choose spot sizes from 2 mm down to 30 µm with an easy to use coaxial video/X-ray design to analyze all types of samples. Orbis users can make elemental analyses on small samples such as particles, fragments and inclusions or automated multipoint and elemental analyses on large topographical samples with all the benefits and simplicity of an XRF analyzer.

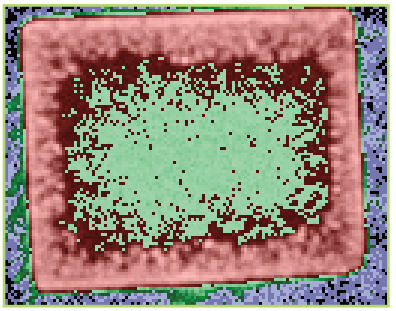
The Orbis incorporates a patented motorized turret integrating video and X-ray optics allowing coaxial sample view and X-ray analysis. This geometry optimizes sample targeting accuracy and eliminates beam obstruction and shadowing. Primary beam filters can be used with a variety of X-ray optics to allow true XRF analytical capabilities in a micro-spot analysis. The working distance is increased to allow analysis over a rougher sample topography without sacrificing signal intensity. Two additional X-ray collimators can be added to the optical turret to analyze larger areas.

Applications

- Criminal Forensics - fragments; gunshot residue (GSR); inks/pigments; trace evidence
- Industrial Quality Control/Failure Analysis - wear metal debris; contaminant identification; corrosion analysis; materials verification; pharmaceuticals and packaging
- Non-destructive Testing - museum artifacts; paper documentation and currency notes; gemstones; authentication
- Materials - metal; glass; ceramics; cement/concrete; catalysts
- Electronics - RoHS; layer thickness and composition; solder joints
- Geology



Ag(L) Elemental map of ceramic pellet supported Ag catalyst.



Pd(L) Elemental map of ceramic pellet supported Pd catalyst.

Orbis Micro-XRF Elemental Analyzer

Specifications

Orbis

- 300 µm or 100 µm mono-capillary X-ray optic
- Dual CCD video: 10x and 100x
- Precision XYZ motorized stage

Orbis PC

- 30 µm poly capillary X-ray optic
- Dual CCD video: 10x and 75x with 3x digital zoom
- High-precision XYZ motorized stage

Standard software

- Qualitative and Quantitative Analysis, including both FP modeling and semi-empirical quantification
- Automated Multi-point Analysis - unattended analysis for up to 20,000 points

Features and Benefits

Co-axial X-ray optic and sample view for accurate sample positioning and X-ray analysis

- Eliminates X-ray beam obstruction and shadowing
- Provides undistorted elemental imaging

Six primary beam filter system available at all X-ray spot sizes

- Improved sensitivity for elemental analysis
- Removes spectral artifacts

LN-free SDD detectors

- 30 mm^2 SDD provides high throughput with excellent resolution and LN-free operation
- 50 mm^2 SDD gives improved sensitivity and increased data collection speed in signal-starved applications (option)

Large vacuum sample chamber

- Accommodates samples up to 270 mm (W) x 270 mm (D) x 100 mm (H)

Patented turret design - 1 mm and 2 mm collimators available with X-ray optic (option)

- Allows homogeneous excitation over larger areas for bulk sample analysis or fast mapping of larger sample areas

Sample chamber viewport (option)

- Large viewable area: 4.9" x 4.9" (124 mm x 124 mm)
- Provides fast, simple view of overall sample positioning - ideal for large high-value objects or multiple small samples or sample trays

Optional software packages

- Spectral Mapping: collects elemental X-ray images to study elemental distribution
- Linear Scans: generates linear elemental X-ray scans, which can be overlaid on the video image
- Alloy Identification: identifies alloy materials based on user library of alloy compositions
- Coating Analysis: analyzes layer thickness and composition of up to five layers simultaneously

Conclusion

Orbis - the micro-XRF spectrometer for all types of samples. Combining multiple spot sizes and a coaxial video/X-ray design, the Orbis provides users with a flexible easy to use tool capable of elemental analysis from powders and fragments to topographical samples.

For more information about our products, contact info.edax@ametek.com or visit us at edax.com.