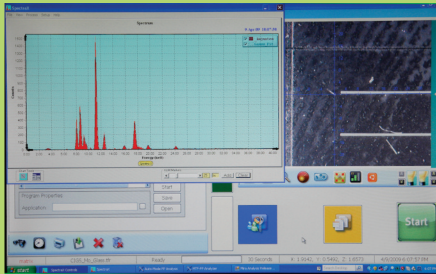
EDAX
Smart Insight

AMETEK®
MATERIALS ANALYSIS DIVISION

Product Bulletin - XRF

XLNCE SMX-BEN Benchtop Analyzer



- Composition and thickness analysis by EDXRF technique
- Complete process control tool from R&D to manufacturing
- Large analysis chamber with programmable X-Y-Z stage positioning
- Versatile software for measuring film thickness and composition, solid compositional analysis, and primary metal concentrations in solution

Application areas:

- Manufacturing process control: photovoltaic, wafer level metallization, metal finishing, micro-electronics, paper, plastics
- Protective coatings: corrosion, wear, thermal barrier, medical implants
- Energy: batteries, CIGS, CIS, CdTe
- Yield management
- Failure analysis

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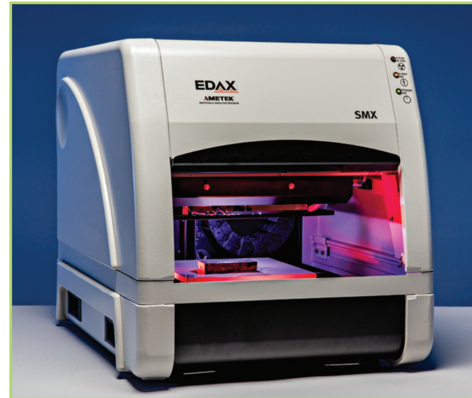


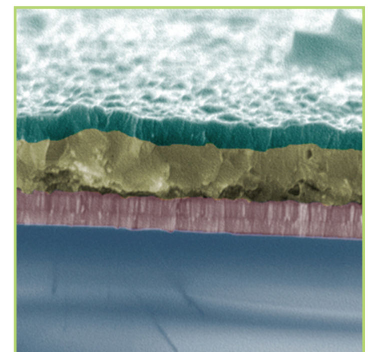
XLNCE XRF analyzers for coating thickness and composition analysis

The **SMX-BEN** is an XRF metrology tool that provides non-destructive analysis for composition and coating thickness measurement of single and multi-layered materials up to 30 elements, ranging from less than a nanometer to microns, quickly and accurately on virtually any substrate.

The SMX-BEN platform is an excellent choice for R&D, process development, process control, and failure analysis. It facilitates and accelerates material selection and recipe formulation in a pre- or early production ramp phase and supports in-process tool platforms well into capacity production.

SMX-BEN analyzers offer:

- An array of choices for X-ray optics and primary filters
- The latest generation of Silicon Drift Detectors (SDD)
- Optimized configuration for the fastest and most accurate results for a wide variety of applications and markets



Cross section showing CIGS layers

The analysis software platform offers both empirical and fundamental parameters (FP) options in a simple to set up calibration process. The software provides an easy-to-use interface for mastering applications from bulk sample and trace analyses to the most sophisticated multi-layer coating applications, and offers accessibility from supervisory to operator levels.

Specifications

X-ray tube

- 50 W, 1mA/50 kV μfocus tube Targets: W, Cr (other target options available)

Detector

- Silicon Drift Detector (SDD)

Collimation

- 6 motorized & programmable
- Capillary option

Primary filters

- 5 selectable & programmable

Camera

- Constant-view variable magnification

Optics

- 20x/40x Mag.
- 4 x 3 Field of View

Positioning

- Motorized X-Y-Z programmable

Focusing Laser

- Optimal Measurement Reproducibility

Software

Qualitative and Quantitative Analysis, including empirical and FP Quantification options

SMX-BEN Enhanced Features

Primary Filters

- Allow the primary X-ray beam output to be modified for increased precision measuring specific elements.

Laser Focusing

- Maintains precise sample-to-detector working distance for optimal measurement reproducibility.

X-Y-Z Programmable

- Programmable positioning increases tool throughput.
- Stored X-Y-Z recipes automate repetitive testing of multiple samples.

Quantitative Software

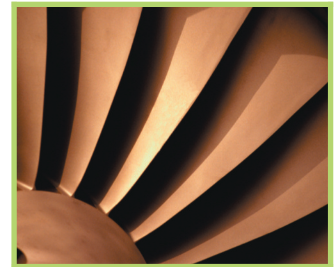
- Multi-layer analysis of 8 layers and up to 30 elements.
- Bulk quantitative analysis.
- Trace analysis for RoHS.

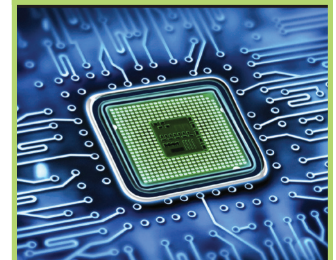
Virtual Analysis

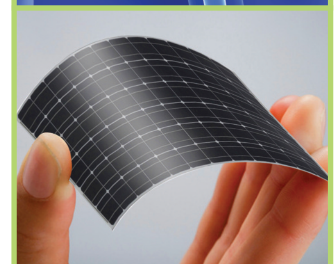
- Three dimensional surface mapping for visual inspection of fine sample structures.

Statistical Tool

- Histogram, Trendline, X-Bar, and R-Chart display along with Mean, Std. Deviation, %Dev, Pp/Ppk, and Min/Max data charts.







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