



AMETEK[®]
MATERIALS ANALYSIS DIVISION

Introducing **SPECTRO XRF Layers**

MULTILAYER THICKNESS
AND ANALYSIS SOFTWARE



**Providing easy, high-speed thickness and
composition analysis of multilayer coatings/platings**

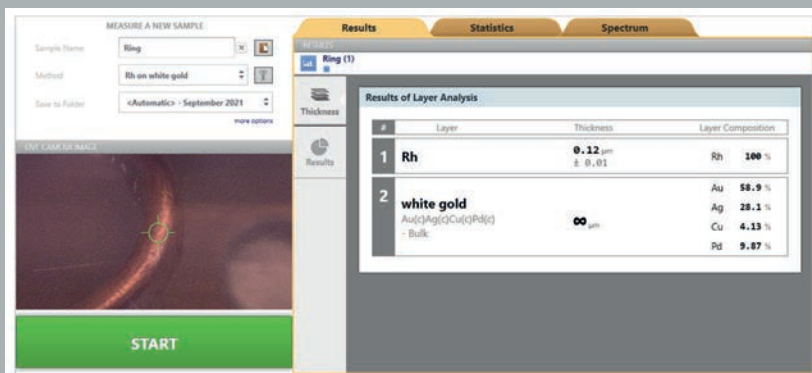
Precise, reliable measurement of multiple coatings or platings

SPECTRO XRF Layers

The new SPECTRO XRF Layers software package allows nondestructive identification of the thickness and elemental composition of multilayer platings and coatings. Capacity: up to 8 layers and 55 elements.

This high-performance software add-on is available for instruments running SPECTRO XRF Analyzer Pro operating software, starting with the popular SPECTROCUBE and SPECTRO MIDEX small-spot analyzers — with new instrument purchases, or as an upgrade. The SPECTRO XRF Layers package brings critical new analysis capability to a wide array of applications. For example, users can now add layer measurement to bulk composition analysis of metals or plating bath solutions, or to compliance screening applications.

SPECTRO XRF Layers is backed by the advanced German engineering that makes SPECTRO a leader in world-class *energy-dispersive X-ray fluorescence (ED-XRF)* spectrometry for applications including plating and metals analysis.



OUTSTANDING USABILITY

Many analyzers still suffer from legacy interfaces with confusing profusions of menus and settings. Fortunately, SPECTRO XRF Layers provides a structured, modern design. Simple, intuitive displays feature an outstanding look/feel and ease of use. Relevant information is foregrounded; distractions are minimized. And the software provides clear, complete documentation of all analysis results: layer setup, coating/plating thickness data, detailed spot images, and (if available) uploadable overview images.

HIGH SPEED

The package's high sensitivity and high-throughput design allow accurate measurement in record time. While most other systems usually require at least 30 seconds, in many cases SPECTRO XRF Layers can deliver an accurate, repeatable multilayer measurement with high precision in only 15 seconds! This 2X savings in testing times makes an especially critical difference in sites such as jewelry hallmarking offices or PCB manufacturing facilities, where highest-volume productivity is essential.

MULTI-TASKING FLEXIBILITY

With SPECTRO XRF Layers, one instrument now has the flexibility to perform three key analytical tasks:

- 1) Analyze elemental bulk composition with proven high performance.
- 2) Measure plating/coating thickness and analyze layer composition.
- 3) In applications such as electronics, test for compliance to environmental regulations such as RoHS.

HIGH PRECISION

SPECTRO XRF Layers takes advantage of SPECTROCUBE's and SPECTRO MIDEX's high sensitivity to provide short testing times that nevertheless yield highly precise results.

For these applications, SPECTRO XRF Layers' high sensitivity allows short testing times with high precision.



APPLICATIONS

JEWELRY PLATINGS

Quality control operations in jewelry manufacturing, assay offices, and hallmarking centers will find SPECTRO XRF Layers an asset for applications such as analysis of rhodium (Rh) on white gold (Au) — both base alloy composition plus plating thickness and composition.

The system's high speed is essential in high-volume applications such as hallmarking, where a center may check purity for 800 samples in 24 hours.

CORROSION AND CONVERSION COATINGS

For manufacturers of aluminum (Al) or steel sheet metal, quality control labs can use SPECTRO XRF Layers for multilayer analyses including zinc (Zn) on steel, chromium (Cr) on hot-dip-galvanized (HDG) steel, zircon (Zr) or titanium (Ti) on aluminum sheets, copper (Cu) on Hastelloy, or zinc-nickel (Zn-Ni) layer thickness with composition analysis.

The system can also perform defect analyses of spots on a single layer.

ELECTRONICS/PCB COATINGS

SPECTRO XRF Layers offers quality monitoring of multiple platings on printed circuit boards and connectors. Example: clear results when a single component or connector features a coating that prevents corrosion, another that promotes conductivity, a nickel (Ni) structure, and a gold (Au) top layer.

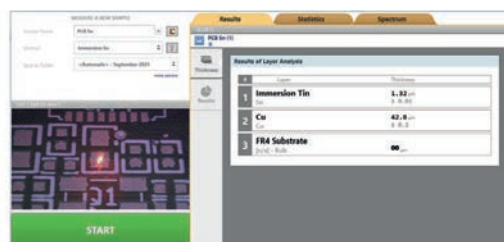
For measurement, the system comfortably exceeds the industry's IPC-4552A standard of 1.33 gage capability (Cg).

A single analyzer can provide quality control composition analysis, layer thickness analysis, and compliance analysis (such as IPC-4552A standard measurement for ENIG coating thickness).

DECORATIVE COATINGS

Makers of decorative coatings may already utilize a SPECTRO analyzer for monitoring the elemental composition of galvanic plating bath solutions and electroplated objects' base metal. Now SPECTRO XRF Layers software provides precise measurement to ensure contracted plating thickness as well. It's an excellent solution for gold (Au), palladium (Pd), bronze (CuSn), platinum (Pt), titanium nitride (TiN) — or even chromium-nickel-copper (Cr-Ni-Cu) on acrylonitrilebutadiene-styrene (ABS) polymers, for example, in the automotive industry.

Where coating combinations change frequently or tender specifications demand it, the package enables initial standard-free analysis.



SPECTRO 9/10/2021

Sample Name: PCB Sn (T) Evaluation Date: 09/20/2021 8:09 AM
 Sample Description: PCB Sn (T) Immersion Sn
 Evaluation Method: Immersion Sn

Results - PCB Sn (T)

Layer	Thickness
1 Immersion Tin Sn	1.32 µm ± 0.01
2 Cu Cu	42.8 µm ± 0.2
3 FR4 Substrate (N/A) - Bulk:	∞ µm

SPECTRO XRF Layers

MULTILAYER THICKNESS
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OUTSTANDING SUPPORT

AMECARE Performance Services maximize uptime for all the world-class elemental analyzer products and services from SPECTRO Analytical and associated companies. The program is staffed by hundreds of experienced service engineers in 50 countries. They provide high-value, customized support designed to ensure optimum performance plus the longest possible equipment life. Ask about AMECARE virtual or on-site demos, SPECTRO PROTEKT secure global remote monitoring, proactive performance maintenance, performance upgrades, applications solutions, consultation, targeted training, and ongoing support.

COMPLETE SUITE OF METAL ANALYZERS

A global leader in ICP-OES and ED-XRF analytical instrumentation, SPECTRO provides one of the industry's most comprehensive suites of advanced elemental analyzers. Devices particularly suited for metals applications include the following:

- **SPECTRO XEPOS:** top-of-the-line, benchtop XRF analytical spectrometer
- **SPECTRO MIDEX:** midrange, versatile benchtop XRF spectrometer; top-down excitation geometry; spot sizes 4 mm down to 0.2 mm
- **SPECTROCUBE:** compact, high-throughput, affordable benchtop XRF spectrometer; bottom-up excitation geometry for liquids analysis; spot sizes down to 0.2 mm
- **SPECTROSCOUT:** portable yet powerful XRF spectrometer
- **SPECTRO xSORT:** ultraportable handheld XRF spectrometer

Whatever the product, SPECTRO's 40 years of experience in elemental analysis, plus its unparalleled record of technological innovation, ensure the best results in the business.

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