



Micro-XRF

Layer and Bulk Analysis

Advanced Micro-XRF Quantification Management

The continuous development and optimization of material properties demands more and more flexibility and accuracy within a straightforward workflow of the analysis of both coatings and compositions.

XMethod and XData are powerful and versatile software packages for the advanced quantification of metal multi-layers and multi-element bulk specimens. With XMethod and XData a wide range of micro-XRF spectrometers (M1 MISTRAL, M2 BLIZZARD, M4 TORNADO, QUANTAX Micro-XRF on SEM) is now prepared to face analytical challenges with comfortable ergonomics and superior flexibility.

Key Benefits

- Freedom to generate individual methods for your analytical challenge
- Confidence in your results with optimized calibration routines
- Simple use for quick integration in your workflow

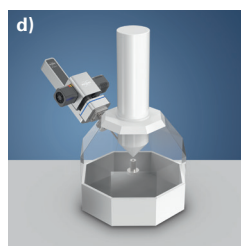
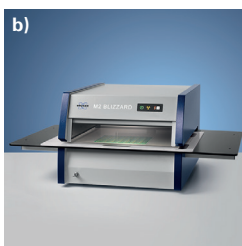
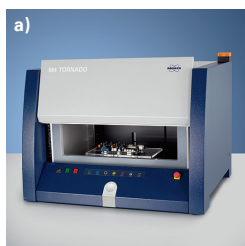


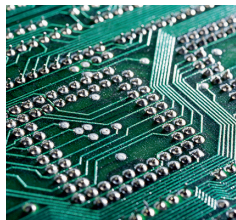
Figure 1

- a) M4 TORNADO
- b) M2 BLIZZARD
- c) M1 MISTRAL
- d) X Trace 2 micro-spot X-ray source



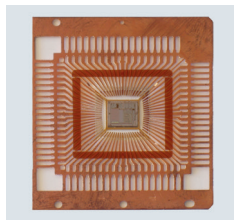
Automotive

Ni/Al
Cr-Ni/Al
ZnNi/Fe
Zn/Fe(Al)
Cr/Ni/Cu(ABS)



Electronics

Au/Ni(P)/Cu
Sn(Pb)/Ni/Cu
SnPb/Cu(PCB)
Au/Ni/Cu(PCB)
SnAgCu/Cu(PCB)



Microelectronics

Ag/Cu
Pt/Ti/Si
Au/Pd/Ni/Cu
CdTe/ZnS/Si
AuAg/Pd/Ni/Cu



Metal finishing

NiP/Fe
CoNi/Fe
Cr/Ni/Cu-ABS
Cr/Ni/Cu/Fe(Zn)



Jewelry

Ag/Brass
Au/PdNi/Ni/Brass
Rh/Au/PdNi/CuSn/
Brass

Figure 2

Applications and
layer types

Key Features

Bulk FP (Fundamental Parameters)

- Complete FP analysis of bulk materials with optional calibration
- Multiple calibration regions possible
- Enables trace analysis in heavy matrices and determination of non-detectable elements by difference
- Calculation time is dependent on the number of elements

Bulk Empirical

(Lucas-Tooth LT and Polynomial)

- Pure empirical calibration based on intensities
- Multiple calibration regions possible
- Fast calculation algorithm, e.g. for maps
- LT: number of standards is N+2, additional elements will negate the validity of the calibration
- Polynomial: suitable for trace analysis, even with non-measurable matrix, only a few standards necessary but the calibration is only valid for samples with same/similar matrix

Layer (FP and Polynomial)

- FP: Complete analysis of multiple multi-element layers with optional calibration, the number of layers and layer elements is only limited by physics
- Polynomial: Analysis of multiple mono-element layers with mandatory calibration, fast calculation algorithm, e.g. for mapping

Regardless the combined instrumentation, XMethod and XData is the most powerful tool for micro-XRF quantification management.

XMethod is integrated into Bruker's ESPRIT software to perform high spatially resolved analysis with the M4 TORNADO or QUANTAX Micro-XRF on SEM with the XTrace 2 micro-spot X-ray source.

XData is an integrated feature of the XSpect-Pro software for the M1 MISTRAL and M2 BLIZZARD small spot spectrometers enabling industrial routine analyses in accordance to ASTM B568 and ISO 3497.

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