# AZtecWave

WDS detection and EDS speed with AZtec accuracy and accessibility

AZtecWave

AZtecWave combines the unique power of WDS to **resolve X-ray peaks** and **quantify minor and trace elements** with the speed and flexibility of EDS. EDS and WDS operation are fully integrated into the AZtec software, guaranteeing maximum accessibility to users with all levels of expertise and Tru-Q® processing technology for the most accurate results. When microanalysis is at its most challenging, AZtec Wave provides accurate answers, fast.
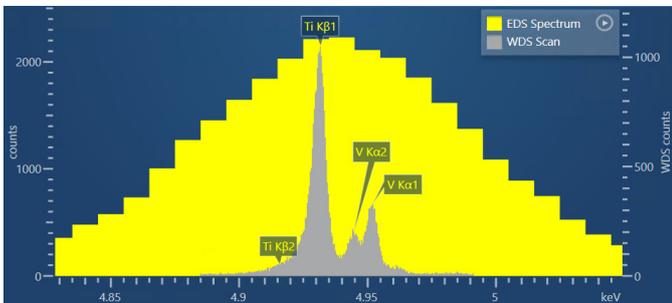
WDS Scan of Ti and V X-ray peaks that overlap in the EDS spectrum (Ti Kß = 4.931 keV, V Ka = 4.949 keV)

New levels of accuracy and sensitivity

- Enhance clarity of element identification and composition, where element peaks are not clearly resolved in the EDS spectrum

- Detect and measure levels of trace elements down to tens of ppm

- Determine accurate composition of all elements at all concentration levels

- Measure major elements using EDS and heavily overlapped or trace elements by WDS

- Solve characterisation challenges in metallurgy, electronics, mineralogy/geology, ceramics, forensics and nuclear power generation

Composition of stainless steel determined by a combination of EDS and WDS

Accessible to all users

- Fully integrated workflows designed to optimise combined EDS and WDS acquisition in the AZtec platform

- New technology uses real-time input from EDS and the SEM to optimise WDS set-up, and gives feedback to the user before the acquisition is started - guaranteeing excellent results in the shortest collection times, and for all levels of user expertise

- The inbuilt technology uses EDS and SEM system information to inform automatic selection of:
  For qualitative WDS spectrum scanning:
    Crystal
   Slit size
    Slit position
    Dwell time

  For quantitative combined EDS-WDS analysis:
  - Count time
  - Line series and X-ray line
  - Diffracting crystal
  - Background positions
  - EDS acquisition parameters
  - EDS detector position

- Unique 3-way control to optimise beam current, count time and precision before quantitative analysis

- Review and assess potential WDS scan quality with the selected settings before starting acquisition

- Flexible, manual control for experienced users

AZtecWave - acquire elements interface for automated set-up of collection parameters
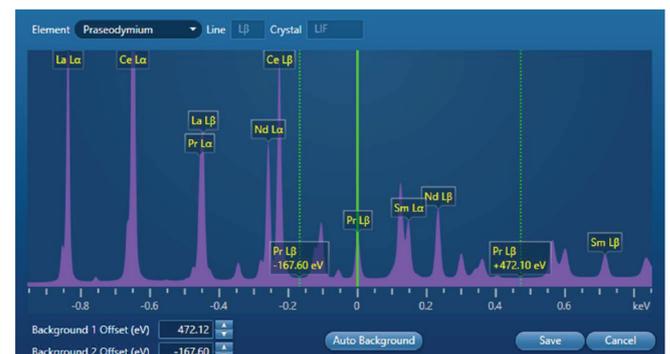
Simulated WDS spectrum for visualisation of parameters and manual adjustment

Accurate for all elements

The Wave WDS spectrometer allows AZtecWave to deliver true electron microprobe performance on a SEM

- Optimised for all energies, meaning the optimum X-ray lines are always available for analysis

- All common overlapping element lines separated including transition metal K lines

- Lowest detection limits, in shorter collection times, with lower beam currents

Integrates seamlessly with the AZtecLive EDS software and technology

- Tru-Q technology provides electron microprobe-level quantitative accuracy at EDS count rates up to 400,000cps

AZtecWave	
Setup spectrometer	✓
Qualitative spectrum scan	✓
Quantitative analysis	✓
Image registration and navigation	✓
Standardisation	✓
Compare WDS scans and EDS spectra	✓
Guided sample exchange and spectrometer shutdown	✓
WDS acquisition simulation	✓
WDS acquisition timeline	✓
EDS informed automatic acquisition set-up	✓
3 way control of beam current/ acquisition time/precision	✓
WDS X-ray Mapping	INCA Energy+ (optional)

Setup Spectrometer

Step by step workflow to guide you through Wave spectrometer setup and performance check

- Designed for inexperienced users

- Ensures safe operation

- Provides rapid system set-up

- Guarantees optimum performance

Generate performance test report where required (e.g. for accredited facilities)

Qualitative Spectrum Scan

A sequence of steps for straightforward setup and acquisition of WDS spectrum scans using the Wave spectrometer

- A scan range can simply be entered by swiping over an overlapped peak in the EDS spectrum, or selecting a candidate element line

- Based on the selected energy range, and using inbuilt technology, crystal, slit size, and slit position are automatically optimised

- A theoretical scan is shown prior to acquisition, enabling settings to be assessed and adjusted before pressing start

- Dwell times can be set between 0.005 and 50 s allowing major through to trace elements to be identified in scans

- Both WDS scans and EDS spectra can be reviewed and compared
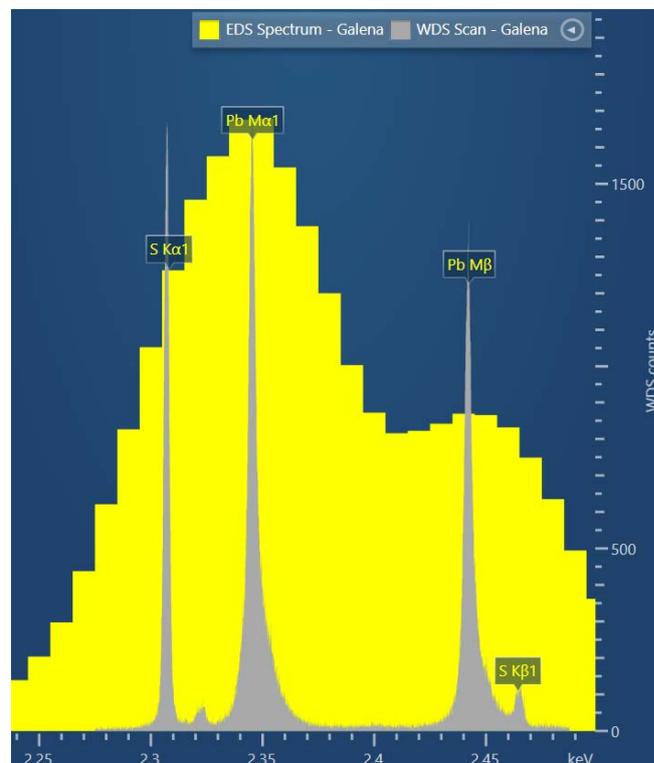
WDS scan of S K and Pb M peaks that overlap in the EDS spectrum
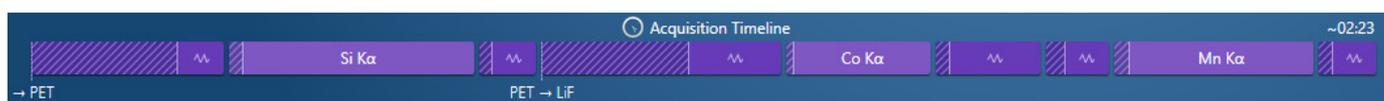
WDS acquisition timeline

Quantitative Analysis

Dedicated workflow for combined EDS and WDS acquisition and quantitative analysis

- Uses EDS for sample analysis location and to automatically optimise all EDS and WDS collection parameters

- 'Acquisition timeline' estimates WDS acquisition time during acquisition set-up and shows status of the Wave spectrometer during acquisition

- Advanced options include adding additional WDS acquisition or an existing EDS spectrum to an analysis

- Dedicated 'Calculation Composition' step for viewing and checking quantitative results from single or multiple acquisitions

- Synthesised WDS spectra transform EDS spectral data into high resolution, high peak to background space for checking overlaps, and acquisition energy for X-ray lines and backgrounds

Standardisation

Guided workflow to ensure system is optimally calibrated using standard materials for accurate composition determination

- Optimised acquisition conditions calculated automatically

- Oxford Instruments 42 and 56 element standard block* composition and map are pre-loaded for easy navigation and speedy set-up

- Association of beam current measurement with EDS count rate for calculation of un-normalised combined EDS-WDS results

  * option

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