

ED-XS

QUANTAX ED-XS

Simplicity delivers affordable science

Innovation with Integrity

Integrated EDS & EBSD

QUANTAX ED-XS is a new integrated EDS & EBSD system designed for the goal of accelerating the pace of progress in science and technology by enabling the large community of entry-level SEM users in academic research and industry to benefit from the power of EDS and EBSD techniques. To achieve this goal, Bruker has developed eFlash XS, the most reliable and most affordable EBSD detector ever commercialized.



Key benefits of QUANTAX ED-XS

Affordable

- Low initial investment cost
- Low cost of ownership: high reliability hardware and Field Replaceable Units (FRU) for very low downtime in unlikely case of detector failure
- Attractive service contract options

Powerful

- Full-featured ESPRIT software suite with future expansion capabilities ensuring full analytical power
- Easy-to-use integrated EDS & EBSD
- Binning capable CMOS EBSD camera combines the best of CMOS and CCD

Dependable

- Optimized use of lab resources:
- Safer operation
 - Run routine analyses to relieve backlog on expensive FE-SEMs
 - New users can be trained and practice EDS & EBSD with less time constraints
 - Check sample preparation quality before an EBSD session on a FE-SEM
- Quick and reliable support by local Bruker specialists

Figure 1 (left)

XFlash® 730M detector.

Figure 2 (right)

eFlash XS detector.

Reliable and easy-to-use EDS & EBSD

QUANTAX ED-XS provides the full functionality for qualitative and quantitative EDS and EBSD analysis integrated under the ESPRIT software suite. A 30 mm² XFlash[®] silicon drift detector (LN₂-free cooling) provides an excellent balance between high throughput rates and light element detection capabilities. The highly capable XFlash[®] detector is complemented by the newly developed and world's most reliable and easy-to-use EBSD detector eFlash XS.

Designed for maximum reliability and EBSD pattern quality, the eFlash XS is powered by a state-of-the-art CMOS camera with 720 x 540 pixels native resolution and the capability to use it in binning modes from 2x2 up to 6x6 pixels. Coupled with an innovative optical system for maximum light transmission and a high performance, user-replaceable phosphor screen, the camera can acquire patterns at a speed of up to 520 frames/second even at moderate electron probe currents. Its USB 3.0 interface for power supply and data transfer makes eFlash XS a truly plug-and-play instrument.

Bruker's high-performance ESPRIT software completes the package to create a powerful, yet easy-to-use analytical tool. Data is acquired, processed, and evaluated using the same software, thus enabling many useful interactive features.

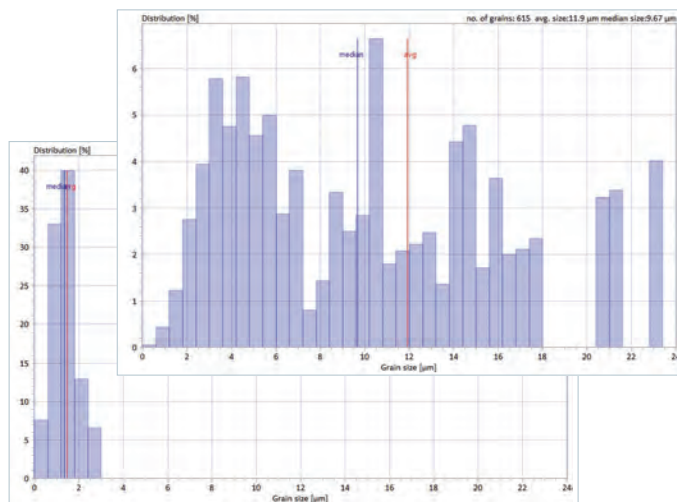
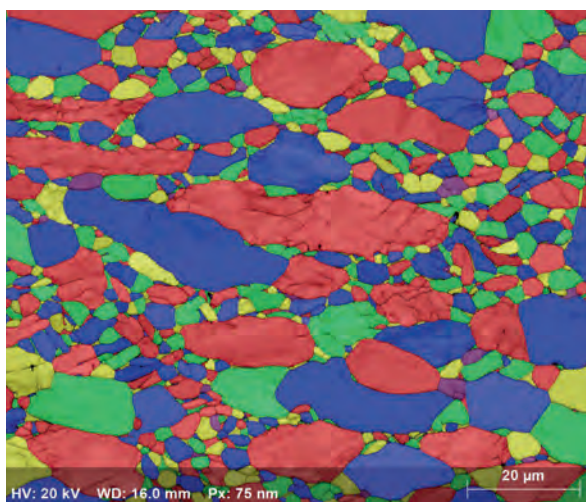
Ease of use is not just a buzz word

These features make QUANTAX ED-XS the perfect analytical tool for entry level users:

- **No calibration required** – ESPRIT software is automatically correcting the pattern center coordinates for any changes in WD between various samples.
- **Automatic camera gain optimization** – quick and reliable feature for acquiring patterns with optimum signal to noise ratio.
- **Automatic crystal phase setup** – no user-intervention required for setting the number of reflectors needed to achieve best pattern indexing quality.
- **Automatic data saving and EHT shut-down** – EDS HyperMaps and EBSD maps can be automatically saved at the end of a map acquisition task following user defined preferences. The EHT can also be shut off automatically to save filament lifetime.
- **No risks of accidental** EBSD detector insertion into the SEM stage. eFlash XS is using a unique functioning principle which allows the easy removal of the detector head to free-up the SEM chamber for non-EBSD related applications.
- **User-replaceable phosphor screen.**

Figure 3

Reconstructed grains map in alpha-beta Ti alloy (left) and corresponding grain size distribution and other grain statistics for the alpha-Ti phase (top-right) and the beta-Ti phase (bottom-right).



Key features and specifications

EBSD detector

- CMOS imaging chip technology
- Native image resolution: 720 x 540 pixels
- Supported binning modes: 2x2, 3x3, 4x4, 5x5, 6x6
- Speed: up to 520 frames/second (fps) in all binning modes
- Custom made optics system with field lens for maximizing light efficiency
- User-removable detector head with slide in & out mechanism
- User-replacable phosphor screen
- True plug and play (PnP) device - data and power transfer via USB3.0 cable
- Length ~ 84 mm (3.31 in), diameter ~ 48 mm (1.89 in)
- Weight 0.85 kg

EDS detector

- Energy resolution < 129 eV at Mn K α
- 30 mm² active area
- Excellent light element and low energy performance, element range B - Am
- Extremely high pulse load capability
- Immediately available once powered on, no detector warm-up necessary during venting or sample changing
- Peltier cooled, no liquid nitrogen or other cooling agents needed
- Vibration-free operation
- Length SEM dependent, diameter 16.8 mm (0.66 in)
- Weight 1.90 kg

ESPRIT software

- Data acquisition and processing done using the same interface
- Multithreaded technology for ultrafast reindexing of EBSD data at up to 60,000 points/s and EDS spectra quantification at up to 2,000 spectra/s
- Multiple automated or semi-automated features for signal optimization and pattern indexing
- Automatic element identification and standardless quantification
- Various pre-defined spectra evaluation methods for typical analysis cases
- Multi-point EDS analysis, ultra-fast EDS line scan and X-ray mapping
- ESPRIT HyperMap: acquisition and processing of full EDS spectrum for each map pixel
- ESPRIT LiveMap: visualization of the element distribution in real time while searching for areas of interest across the sample
- Phase editor for easy creation and/or editing of phase entries used for pattern indexing
- Misorientation distribution features
- Automatic grain reconstruction and statistics calculation (size, shape and main axis inclination)
- Grain boundary analysis including CSL
- Multitude of subset creation and processing options
- Orientation distribution (crystallographic texture) representation features
- Bruker Phase Database and American Mineralogist Phase Database included
- Report generation and export
- Export of maps and histograms in text and standard image formats, e.g., JPEG, PNG, Bitmap, TIFF
- ESPRIT StageControl: control of the SEM's stage motor

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