QUANTAX ED-XS

Simplicity delivers affordable science

Innovation with Integrity

EDS & EBSD

Integrated EDS & EBSD on JSM IT200

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 e-Flash XS, the most reliable and most affordable EBSD detector ever commercialized.

Key benefits of QUANTAX ED-XS

Affordable

- Low initial investmet 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 2 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:
  - Run routine analyses on IT200 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
- Safer operation
- Quick and reliable support by local Bruker specialists

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 2 software suite. A 30 mm^2 XFlash® Silicon Drift Detector (LN_2-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 e-Flash XS.

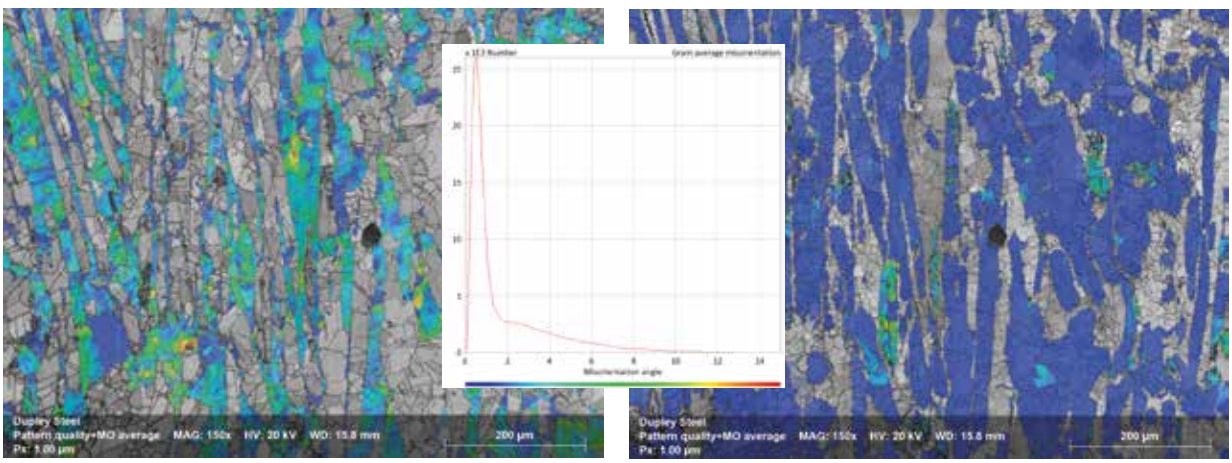
Designed for maximum reliability and EBSD pattern quality, the e-Flash XS is powered by a state-of-the-art CMOS camera with 720 x 540 pixels native resolution and the capability to use it in binning modes from 2x2 up to 6x6 pixels. Coupled with an innovative optical system for maximum light transmission and a high performance, user-replaceable phosphor screen, the camera can acquire patterns at a speed of up to 525 frames/second even at moderate electron probe currents. Its USB 3.0 interface for power supply and data transfer makes e-Flash XS a truly plug-and-play instrument.

Bruker's high-performance ESPRIT 2 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

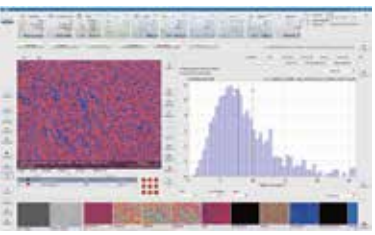
These features make QUANTAX ED-XS the perfect analytical tool for entry level users:

- **No calibration required** – ESPRIT 2 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 shutdown** – 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. e-Flash 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**.



Subsets of Grain Average Misorientation map indicating that Ferrite grains are in a deformed state (left) while most of the Austenite grains are fully recrystallized (right).

Technical Specifications



Component	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: 525 frames/second (fps) in all binning modes • Custom made optics system with field lens for maximized light efficiency • User-removable detector head with slide in & -out mechanism • User-replaceable phosphor screen • True plug and play (PnP) device - data and power transfer via USB3.0 cable • Outer dimensions: length ~ 84 mm (3.3 in), diameter ~ 48 mm (1.9 in)
EDS Detector	• Energy resolution < 129 eV at MnKα • Excellent light element and low energy performance, element range Be – Am • 30 mm^2 active area • Extremely high pulse load capability • Vibration-free, Peltier cooled • Immediately available once powered ON
ESPRIT 2 Software	• Data acquisition and processing done using the same interface • Multithreaded technology for ultrafast reindexing of EBSD data at up to 60,000 points/sec and EDS spectra quantification at up to 2,000 spectra/sec • 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 • HyperMap: acquisition & processing of full EDS spectrum for each map pixel • 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 & 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

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