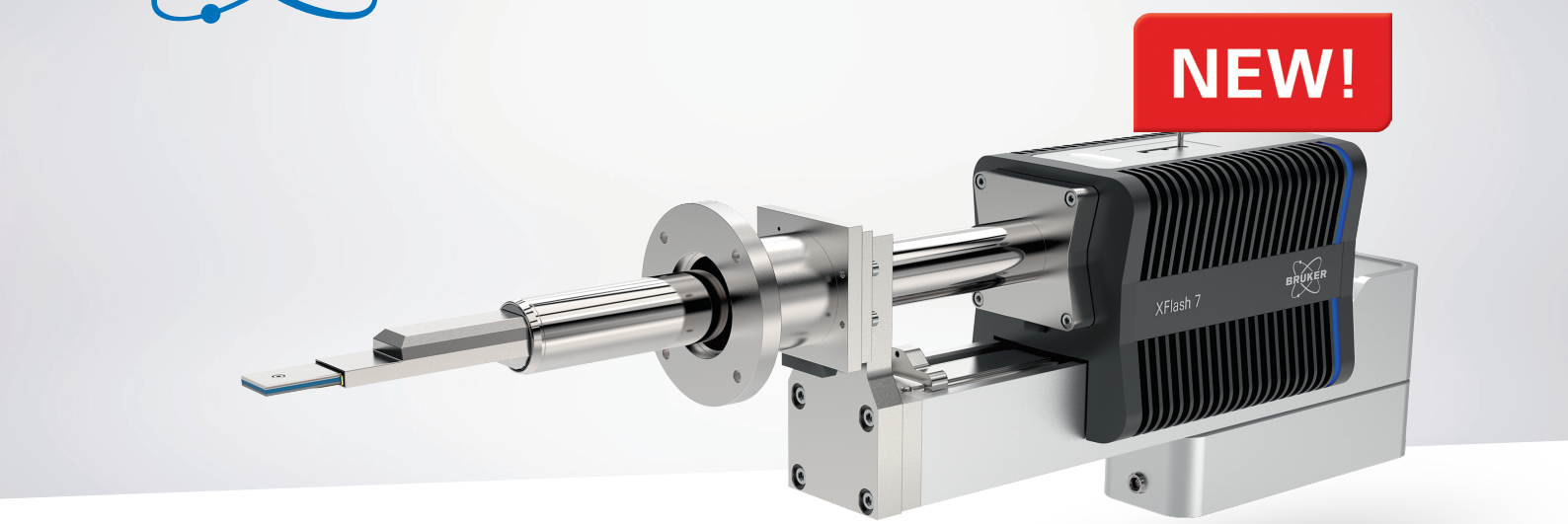


EDS

XFlash® FlatQUAD 2L

Taking Energy Dispersive X-ray Spectroscopy to New Limits

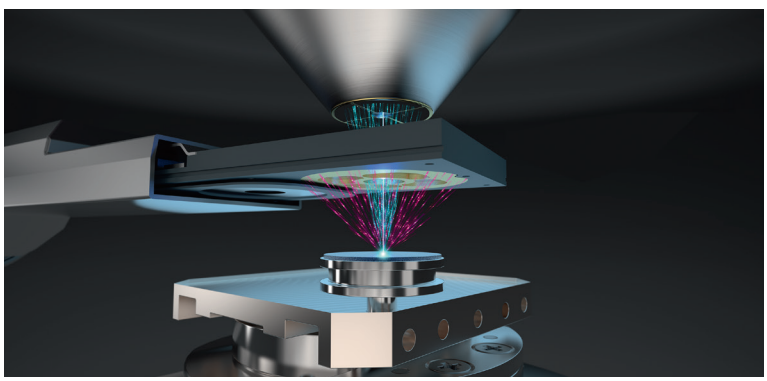
The XFlash® FlatQUAD 2L detector is the core of the QUANTAX FlatQUAD system and redefines SEM analysis by combining ultra-efficient X-ray collection with simultaneous secondary (SE) and backscattered electrons (BSE) imaging in a unique annular detector design.

Positioned directly between the sample and SEM pole piece, the annular four-channel detector geometry maximizes signal collection efficiency, enabling industry-leading through-put, ultra-high resolution elemental mapping, and advanced correlative analysis workflows.

With the XFlash® FlatQUAD 2L, analysts can acquire high-quality elemental data faster, with higher spatial resolution, and from more challenging samples than ever before.

Revolutionary Detector Concept

- Unique annular four-segment SDD design with central beam aperture
- Exceptional collection efficiency with solid angles exceeding 1 sr
- Simultaneous EDS and SE/BSE signal acquisition
- Optimized geometry for minimal shadowing and maximum sample visibility



The X-ray signal emitted from the sample (magenta) is collected by the four SDD segments, whilst backscattered electrons (blue) pass back through to the SEM pole piece.

Innovation with Integrity

Key Benefits

- Industry-leading X-ray collection efficiency
- Output count rates up to 4,000,000 cps
- Simultaneous X-ray (EDS) and SE/BSE acquisition
- Faster workflows through single-pass acquisition
- Enhanced data quality by multi-signal correlation and quantification
- Elemental mapping at the nanometer scale
- Analysis of sensitive and charging samples
- Reduced sample exposure and rescanning
- Minimal shadowing on topographic specimens
- Operation in high and low vacuum environments

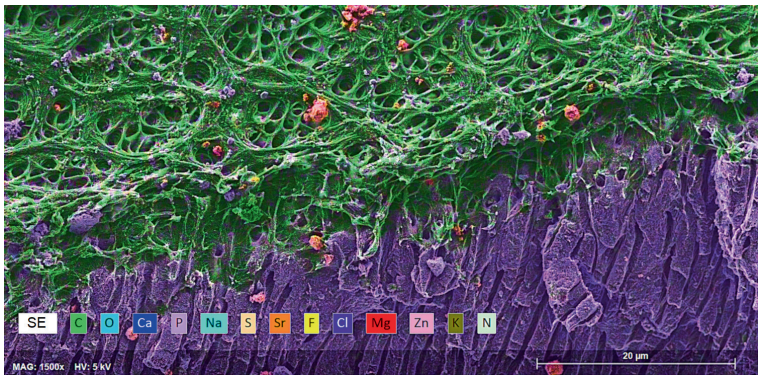
Correlative EDS + BSE Imaging

The enlarged central aperture of the XFlash® FlatQUAD 2L allows the primary electron beam to pass unobstructed through the detector toward the sample. At the same time, backscattered electrons (BSE) can travel back through the aperture to the SEM pole piece, where they are detected by the microscope's retractable or in-lens BSE detector. This unique geometry enables the simultaneous acquisition of elemental information (EDS) and compositional contrast (BSE) from the same interaction volume, delivering perfectly correlated multimodal datasets in a single measurement.

Next Generation of SEM Analysis

The XFlash® FlatQUAD 2L pushes SEM EDS beyond conventional limits. From nanostructured semiconductors and advanced battery materials to sensitive biological specimens, pharmaceuticals, additively manufactured components, and electron-transparent FIB lamellae, the detector delivers exceptional analytical performance. Combining unparalleled X-ray collection efficiency even with STEM-in-SEM imaging capabilities, it enables simultaneous structural and chemical characterization at the nanoscale, revealing more information in less time.

Analysis of a Human Tooth



High-resolution EDS map of biofilm dentin interfaces of a human tooth specimen. The exceptionally collection efficiency of the XFlash® FlatQUAD 2L enables high-statistics elemental maps from complex biological specimens with high topography. The chemical composition of a dental biofilm and the underlying dentin are visualized simultaneously across a large field of view at 5 kV and 300 pA.

All configurations and specifications are subject to change without notice.
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