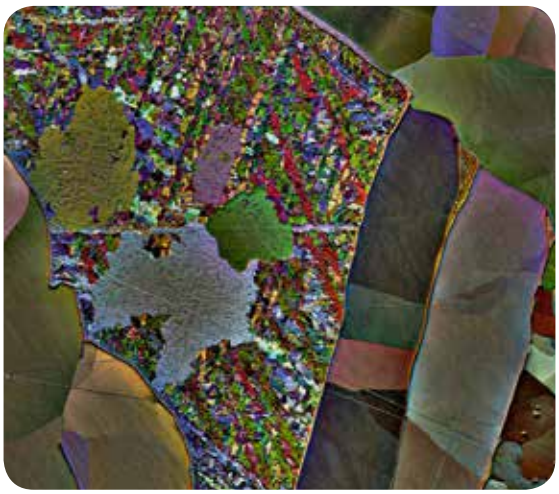
Fast & Sensitive



e⁻Flash FS – High sensitivity & throughput EBSD detector

Detector sensitivity is of outmost importance for high-speed EBSD applications. The new EBSD detector ***e⁻Flash FS*** has been designed for maximum sensitivity to allow high-speed EBSD measurements without compromising data quality even on difficult cases like *deformed or lightweight materials*. To further improve the pattern quality, the cooling system of the ***e⁻Flash FS*** has been upgraded to lower its functioning temperature and therefore reduce the dark current of the CCD camera as much as possible.

Thanks to a sensitivity improvement by a factor of three and a dark current drop by at least a factor of four (compared to the former *e⁻Flash 1000*), the new ***e⁻Flash FS*** detector is the best choice for all "Hough based" EBSD applications.

The huge camera sensitivity improvement combined with high speed and high efficiency phosphor screen makes the new ***e⁻Flash FS*** detector the ideal solution for dynamic experiments like *in-situ heating* and *in-situ tensile/compression testing*.

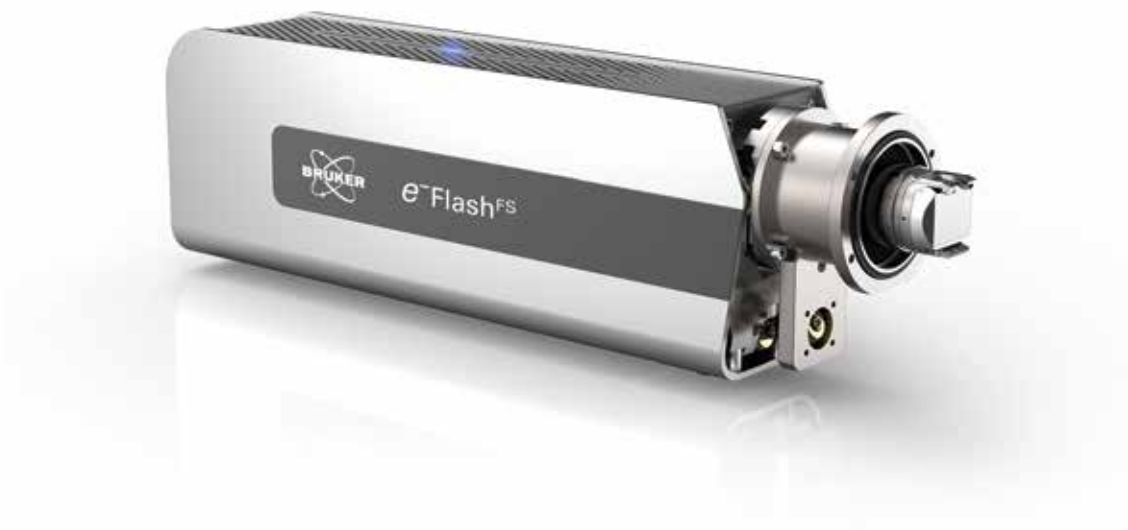
3D EBSD is another important application that will greatly benefit from the speed and sensitivity capabilities of the new ***e⁻Flash FS*** detector.

The acquisition of a 400 x 300 pixels map/slice will now be ready as quickly as in ~2 min 10 s. This means that the data acquisition part of a 70 slices 3D EBSD data cube (8.4 M voxels) will require only ~2.5 hours.

Its excellent sensitivity makes the new ***e⁻Flash FS*** detector the perfect solution for *low kV EBSD applications* as well as *Transmission Kikuchi Diffraction (TKD)* in the SEM a.k.a transmission EBSD (t-EBSD). Orientation mapping in transmission mode using the new detector retrofitted with the unique OPTIMUS™ TKD detector head is now possible at speeds of up to 630 frames per second (fps) while achieving an effective spatial resolution of at least 10 nm.

When necessary, the effective spatial resolution can be improved down to 2 nm by using a smaller aperture on the SEM column and still reach acquisition speeds of up to 300 fps with very good indexing rates. With typical measurement times of just a few minutes per map, *high-speed TKD* not only brings a remarkable increase in efficiency but it also minimizes artifacts induced by beam instability.

Feature/Option	Benefits
Sensitivity	High indexing rates at high acquisition speeds even on deformed materials or materials with a low electron scattering yield
Low functioning temperature / low CCD dark current High quality optics	Low noise patterns with better indexing quality
OPTIMUS™ TKD	Provides optimum sample-detector geometry for TKD analysis. OPTIMUS™ TKD transforms an SEM into a low kV TEM with orientation mapping as well as dark and bright field imaging capabilities.
ARGUS™ FSE/BSE	Fully automated color-coded orientation contrast (FSE) imaging and grayscale "BSE" like imaging. FSE images are extremely sensitive to small changes in the Kikuchi signal, e.g. residual strain, magnetic domains, etc.
High efficiency / High speed phosphor screens	User-replaceable phosphor screens optimized for high speed and in-situ heating experiments – no compromises between screen efficiency and speed (decay time).
High precision guiding system	Motorized screen positioning with precision better than 10µm – no detector/screen rotation
Slim detector head design	Provides optimum (best solid angle) conditions for simultaneous EBSD/EDS measurements
In-situ detector tilt	Allows optimization of sample-detector geometry for perfect screen illumination at any WD inside the SEM chamber. This standard feature is high vacuum compatible due to built-in welded bellows.
Collision sensor	Automatic retraction of detector at a speed of 10 mm/s (audio alarm present)
All electronics inside the detector casing	No external boxes – just two Ethernet cables making the connection with the PC



Bruker Nano GmbH
Berlin · Germany
Phone +49 (30) 670990-0
Fax +49 (30) 670990-30
info.bna@bruker.com

www.bruker.com/quantax-ebsd