Bruker Nano

123 eV
at Mn Kα
100,000 cps

XFlash® QUAD 5040 – The four-channel 40 mm² SDD

Bruker´s unique XFlash® QUAD detector is a four-channel 40 mm² silicon drift detector (SDD) with a best guaranteed energy resolution of ≤123 eV (Mn Kα) at 100,000 cps. Using a passive thermoelectric cooling device, the XFlash® QUAD requires no liquid nitrogen for operation and contains no moving parts. These features make it absolutely free of vibration and result in no distortion of SEM images even at extremely high magnification. Additionally, the detector's optimized electron trap allows interference-free analysis even at low excitation energies.

Four independently operating 10 mm² sensors on a single chip, all equipped with integrated anodes and FETs, form the heart of the XFlash® QUAD Detector. This arrangement provides the high energy resolution of a single 10 mm² sensor at four times the count rate, accepting maximum input count rates in excess of 3,000,000 cps. The XFlash® QUAD is designed to provide large solid angle X-ray detection and a tremendous X-ray signal throughput of 1,100,000 cps. This detector can process the fourfold number of counts at the same dead time and before pile-ups occur, compared to a single channel 10 mm² detector.

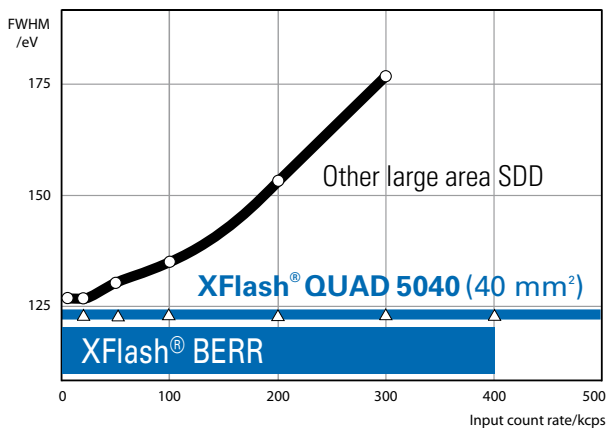
The four single chip design makes this detector as insusceptible to incomplete charge collection (which can impair the low energy performance significantly) as Bruker's XFlash® 5010. This results in excellent energy resolution in the low energy / light element range. That is a precondition for improved peak separation and the basis for reliable qualitative and quantitative analysis results in this area. The 123 and 125 eV versions of this detector are available with beryllium detection.

At the same time the QUAD delivers significantly faster EDS results, making it the ideal choice for high resolution real-time spectrometry, high speed mapping and especially HyperMapping (large area PTS / hyperspectral imaging).

The XFlash® QUAD can be installed on field emission, environmental and variable pressure scanning electron microscopes. In addition, the enormous maximum input count rate of this detector allows its use on microprobes during their normal operation. This makes the simultaneous measurement of any number of elements as well as the analysis of rough samples, particles and tilted specimens possible on microprobes.

Specifications
Energy resolution of 123 eV Mn Kα, 46 eV C Kα, 54 eV F Kα Also available 125 eV Mn Kα, 48 eV C Kα, 58 eV F Kα 127 eV Mn Kα, 54 eV C Kα, 62 eV F Kα 129 eV Mn Kα , 58 eV C Kα, 66 eV F Kα All data stated in compliance with ISO 15632 : 2002 and guaranteed at 100,000 cps
Detection from boron (5) to americium (95), beryllium (4) detection available with 123 and 125 eV versions
Allows extremely high count rates (maximum input count rate higher than 3,000,000 cps)
Active area of 40 mm^2 (4 x 10 mm^2)
Optimized electron trap for interference-free analysis in the low energy range
Peltier cooling (no liquid nitrogen or other cooling agents required)
Due to compact design, low weight and vibration-free cooling method no image distortion at the SEM

Detector comparison



Comparing the energy resolution of the XFlash® 5040 with another large area SDD. The blue bar indicates the input count rate up to which the XFlash® 5040's best energy resolution is guaranteed (BERR, best energy resolution range).

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