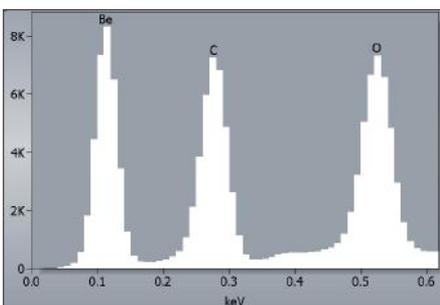


Thermo Scientific UltraDry silicon drift X-ray detector

Benefits

- The Thermo Scientific™ UltraDry™ X-ray detector represents the modern generation of X-ray detection in the electron microscope
- Built with the latest SDD technology, these detectors are designed for outstanding spectral performances at both low energy and also at very high X-ray throughput rates



Beryllium spectrum captured at 3 kV accelerating voltage

The UltraDry X-ray detector provides superior resolution at incredibly high collection rates. Silicon drift detector technology establishes the foundation for the UltraDry design. Advanced field-effect transistor (FET) integration and a proprietary preamplifier stage create the extraordinary operating space that enables the superior performance of the UltraDry detector. By dramatically shrinking the size of the FET and by integrating it directly into the crystal structure, the device capacitance that leads to electronic noise is virtually eliminated.

By optimizing and characterizing the detector electronics, pulse pile-up and sum peaks are effectively handled; dead time is minimized and resolution is maximized on the fly across a wide range of operating conditions. The result is an extremely high data collection rate with no external or liquid nitrogen cooling and virtually no sacrifice in energy resolution.

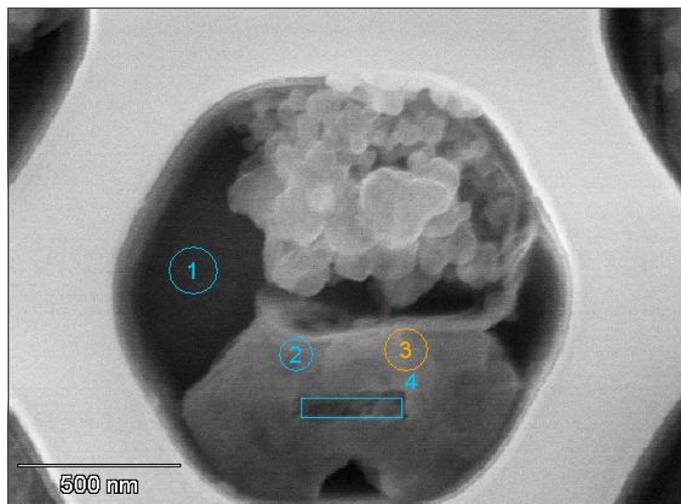
The UltraDry detector is more than just a world class detector. It is part of a highly engineered, fully integrated X-ray microanalysis system. Advanced pulse processing technology coupled with unique algorithms to address zero-peak artifacts provides full light-element analysis down to beryllium.

The unique-to-Thermo slotted collimator design allows for consistent collection rates across the widest possible range of working distances, which is absolutely critical to dual EDS and EBSD acquisition.

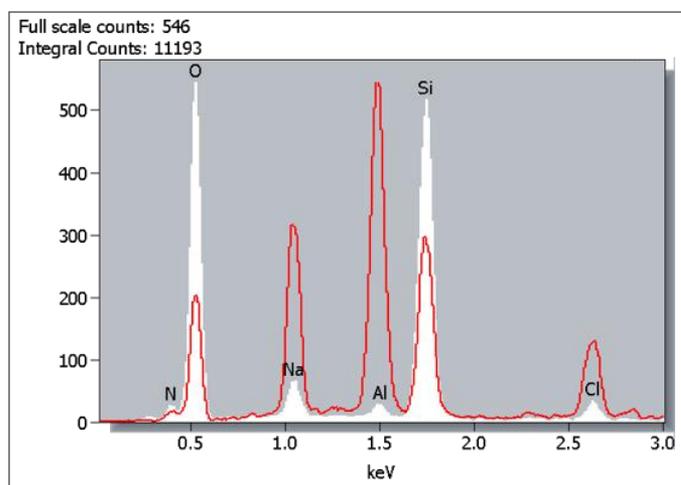
The offered range of crystal active areas (10 mm², 30 mm², 60 mm², 100 mm²) and the smallest in class packaging envelope provides the greatest solid angle of collection available for a detector on the market today. The result is a detector that provides the fastest collection and most accurate interpretation of X-rays.

Specifications

- FWHM measured (ISO 15632) at 5.89 keV (Mn-K α) with 10,000 counts per second stored in the spectra
- Input count rates up to 1,000,000 X-rays per second
- Output count rates up to 300,000 X-rays per second
- Variable working distance range of 10 mm for maximum flexibility in working distance during the acquisition without a loss in counts
- Windowless detector available for light element sensitivity to lithium
- Light element sensitivity down to beryllium as standard
- No auxiliary cooling connections, water or fans—no liquid nitrogen
- Operating environment to 35 °C
- ± 5 eV resolution change (± 3 eV typical between 1% and 60% dead time) from minimum to maximum count rate at a given analyzer time constant
- ± 5 eV peak shift (± 3 eV typical between 1% and 60% dead time) from minimum to maximum count rate at a given analyzer time constant
- Motorized slide optionally available



EDS Point mode analysis of a micro array cell contaminated with beam-sensitive salt residue



X-ray EDS spectra collected from circle #1 and circle #2

EDS detectors in the SEM

Active Area (mm ²)	Available Energy Resolution (eV)		
	Mn	F	C
10	123	56	47
10	129		
30	127	60	52
30	129		
60	127	60	52
60	129		
100	129		

Table 1: EDS detector resolutions in the SEM

EDS detectors in the TEM

Active Area (mm ²)	Available Energy Resolution (eV)		
	Mn	F	C
30	127	60	52
30	129		
60	127	60	52
60	129		
100	129		

Table 2: EDS detector resolutions in the TEM

Find out more at www.thermofisher.com/microanalysis

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