

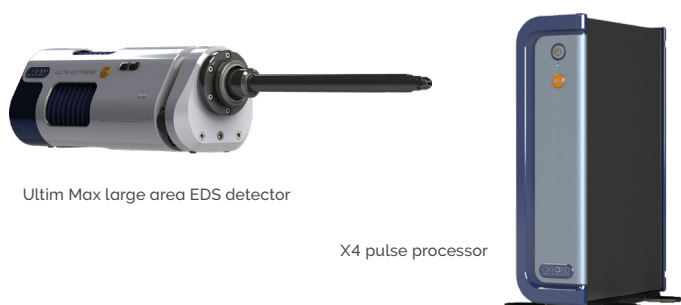
Ultim[®] Max EDS detectors



The latest EDS technology for faster and more reliable analysis

Ultim Max EDS detectors use high-end technology to deliver unparalleled speed and sensitivity without compromising on accuracy or quality. This range of detectors combines the largest sensor sizes (up to 170 mm²) with Extreme electronics to deliver remarkable performance.

Only **Ultim Max** has guaranteed performance at low (C K α and F K α) and high energy (Mn K α) at the same highly productive count rate of 130,000 cps for all sensor sizes. This performance is tested on an SEM before shipping and again at installation to ensure every Ultim Max delivers excellent results even under the most demanding analytical conditions, for example high count rates, low kV analysis, and in-situ testing.



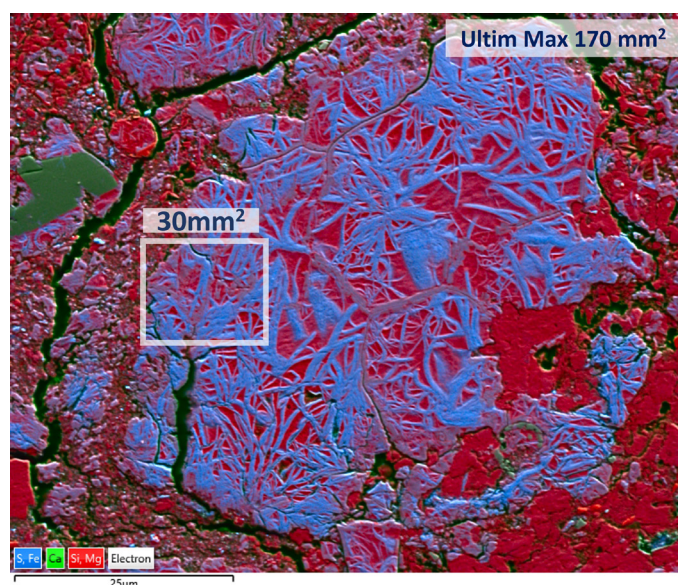
Ultim Max combines the largest SDD sensors with unique Extreme electronics

- 40, 65, 100 and 170 mm² sensor areas - for higher count rates under any conditions
- Lowest noise X-ray detection – improved sensitivity for low energy X-rays means that not only is Beryllium detection guaranteed, but also Si LL and Al LL are commonly detected
- Quantitative analysis at >400,000 cps – outstanding accuracy in a fraction of the time
- Mapping at > 1,000,000 cps – achievable at normal beam currents using the larger area sensors available with Ultim Max, providing more capability than any other detector range
- Sensor independent guaranteed performance at full range of X-ray count rates and energy (high and low), fully in line with ISO15632:2021
- Carbon, fluorine and manganese resolution all guaranteed at 130,000 cps

Maximise throughput with larger sensors

Compared to a 10 mm² detector, a 170 mm² will:

- Detect the data 17x faster or map 17x more of your sample (under the same conditions)
- Reduce beam current by 94% to minimise beam damage
- Minimise sample contamination



High Resolution EDS map of the Winchcombe meteorite collected using Ultim Max 170 shows Fe-rich fine serpentine vein structure occurring in an altered olivine grain, vein structure down to 100 nm in size, Sample courtesy of the UKFALL. The white square shows the area that can be collected using a 30 mm² EDS detector in the same time under the same conditions

Accurate and consistent results at low and high count rates guaranteed due to unique detector stability as conditions change

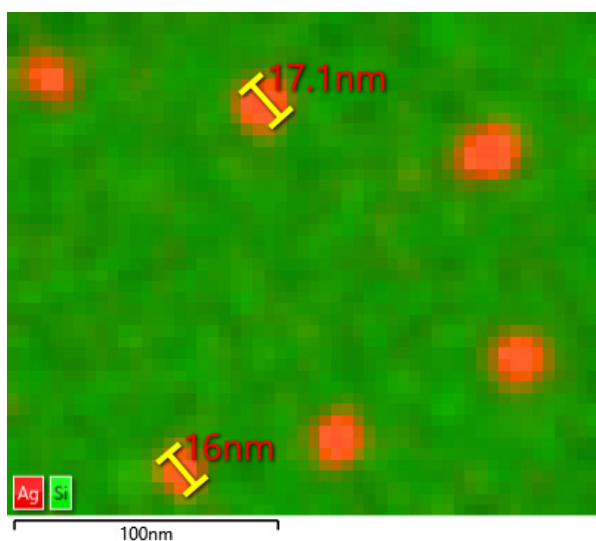
- Stability specification: Peak position and resolution guaranteed to change by no more than 1 eV between 5,000 cps and 100,000 cps

	O	Na	Al	Si	K	Ca
4,000 cps	46.68	2.55	9.92	30.56	10.04	0.25
400,000 cps	46.71	2.55	9.89	30.62	9.97	0.27

Quantitative analysis of an Orthoclase standard shows the same accurate results whether collecting at 4,000 cps or 400,000 cps

Ultim Max makes the most challenging analysis possible

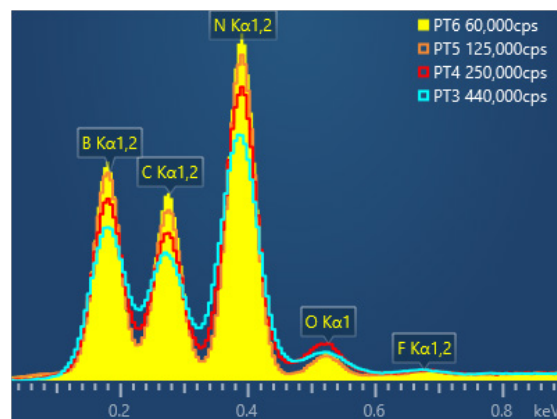
- Highest sensitivity – for light element and nanoanalysis
 - Routine detection and characterisation of light elements like boron, carbon, nitrogen and oxygen
 - Excellent energy resolution even at high count rates
- Work at lower kV
 - Achieve ultra high spatial resolution
 - Routine characterisation of fine structures (<50 nm)



Ultra high resolution EDS map of Ag nanoparticles, Ultim Max 170, 1 million times magnification, 5 minute acquisition at 5 kV. Sample courtesy of University of Orleans



Fine scale microstructure with faceted iron oxide and olivine grains in a silicate-rich matrix collected from the Winchcombe meteorite using Ultim Max 170 for 90 seconds at 5 kV. Sample courtesy of UKFALL



Routine detection of B, C, N and O at low and high count rates

- Guaranteed low energy performance at high throughput (130,000 cps),
- Carbon K α resolution typically <50 eV

EDS Hardware – Ultim Max with X4 electronics

Sensor Size	40 mm ² to 170 mm ²
Detection Range	Be (4) to Cf (98)
Resolution @130,000 cps Fully in-line with ISO15632:2021	Mn K α <127 eV F K α < 64 eV C K α < 56 eV
Premium Detectors @ 50,000 cps (Ultim Max 40, 65 and 100)	Mn K α <124 eV F K α < 58 eV C K α < 48 eV
Mapping count rate	>1,000,000 cps
Quantitative count rate	>400,000 cps
Detector stability	Peak position and resolution guaranteed to change <1 eV between 5,000 cps and 100,000 cps
SATW Ultra Thin Polymer Window	For the best low energy performance Resistant to ballistic damage
Cooling	LN ₂ - free, vibration free, Peltier Cooling
Motorised slide	As standard
Multiple detectors	Up to 4 detectors use the same X4 electronics

Visit nano.oxinst.com/ultim-max

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