

AZtecTEM

Collect more. See more. Do more.



**High solid angle detectors
delivering accurate results**



Ultim[®] Max

Large solid angle silicon drift detectors



- Analyse your nanostructures with ease
- Optimised for *in situ* experiments

SnO₂/Ga₂O₂ Nanowires

Sample courtesy of Dr Bianchi Mendez, Universidad Complutense Madrid, Spain
Data courtesy of Dr Ana Sanchez-Fuentes, University of Warwick UK

Learn more at nano.oxinst.com/AZtecTEM

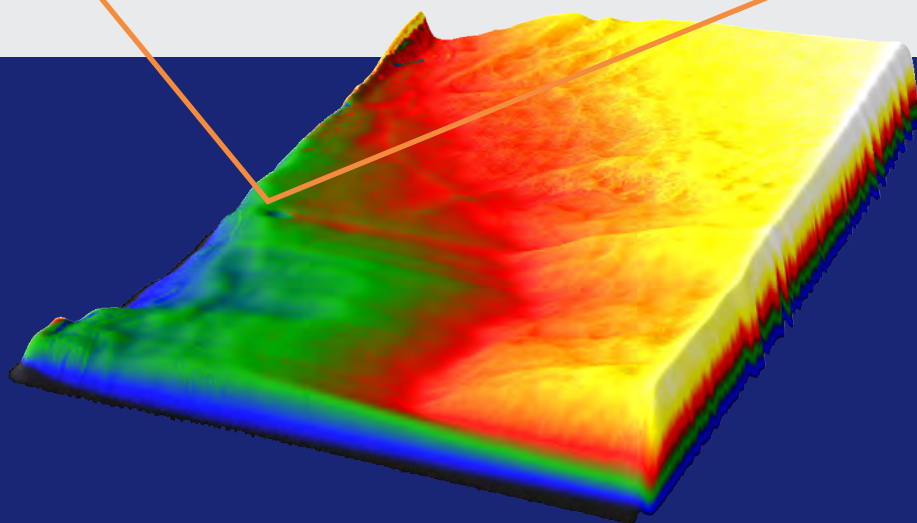
AZtecTEM

Quantification with automatic absorption correction

Element	Wt%	Absorption Correction
Si	0.85	1
Ni	71.95	0.83
Fe	9.76	0.83
Cr	14.06	0.83
O	2.46	1.13
Mn	0.92	0.83

Specimen Mass Thickness ($\mu\text{g}/\text{cm}^2$) = 50.03

Specimen Thickness(nm) = 59.07

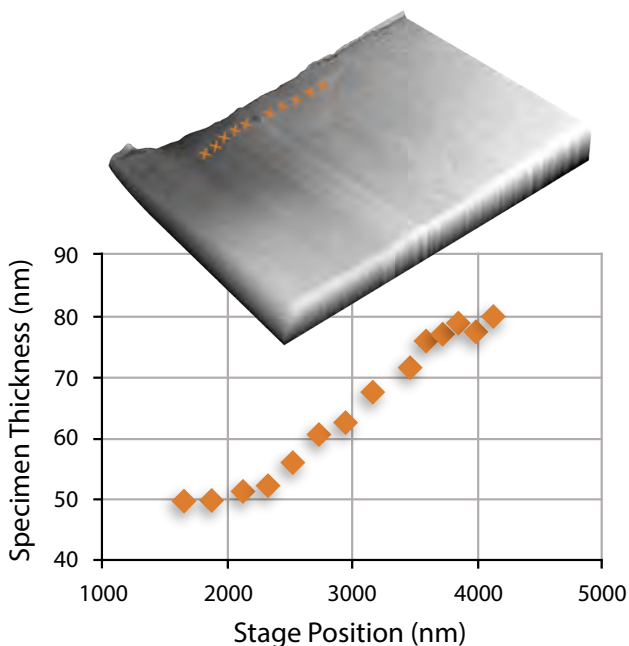


**Easily measure specimen
thickness using EDS**

Learn more at nano.oxinst.com/AZtecTEM

Measurement of mass thickness

Easy-to-use standardised quantification



Automatic absorption correction

Corrects for sample thickness for more accurate quantitative analysis.

Direct measurement of specimen thickness using EDS

No need for EELS or complex calibration specimens.

Single standard quantification

Method requires only a single measurement, without any need to measure beam current.

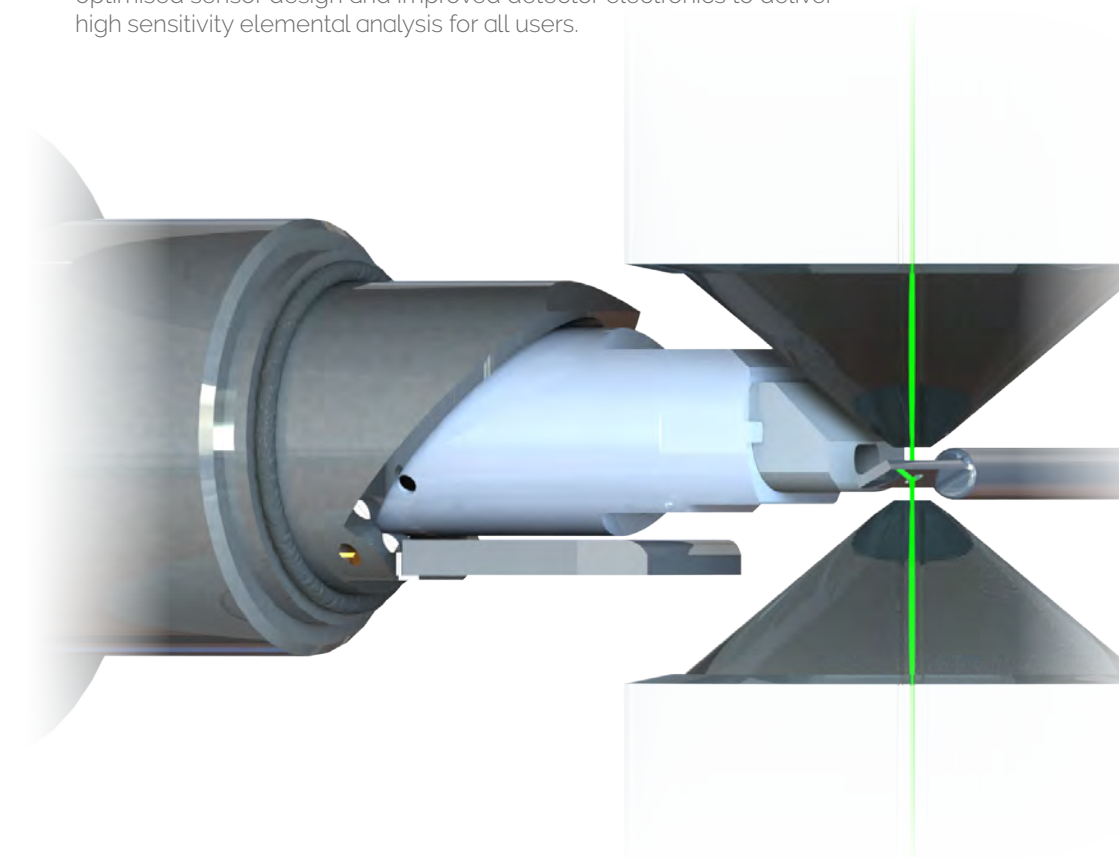
Xplore TEM	Ultim Max TEM	Ultim Max TLE	2x Ultim Max TLE
80mm² for fast, accurate elemental characterisation	80mm² for elemental mapping of nanostructures	100mm² for elemental characterisation at the atomic scale	200mm² for elementally mapping atoms
SATW window for ease of use	Windowless for improved low energy sensitivity	Windowless for improved low energy sensitivity	Windowless for improved low energy sensitivity
0.2 - 0.3 srad*	0.2 - 0.5 srad*	0.4 - 1.0 srad*	2 srad*

* Achievable solid angle (microscope dependent).

Sensitive

Revolutionary

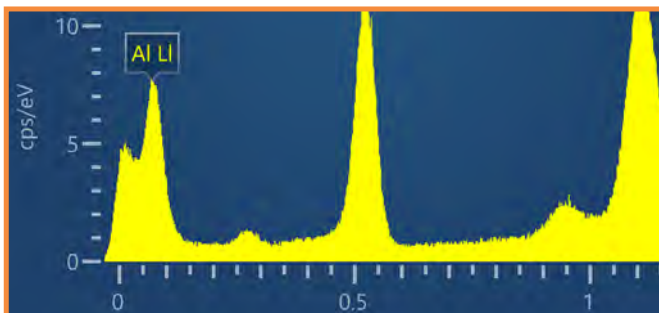
Ultim Max is a revolution in SDD detector performance on the TEM, making use of optimised sensor design and improved detector electronics to deliver high sensitivity elemental analysis for all users.



Extreme Electronics

The electronics that delivered the first Li detection by EDS

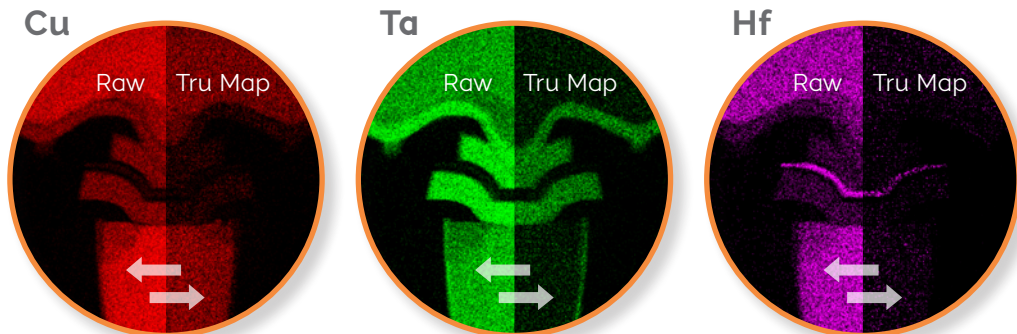
Ensure that you use more of the counts that you generate and you can accurately identify X-ray lines down to 72eV.



See what is really there

AZtec® TruMap - removes artefacts and solves peak overlaps in real-time for an accurate representation of elemental distribution in your sample. For example, the overlaps between Cu, Ta and Hf in many semiconductor devices as shown below.

AutoPhaseMap – automatically separate elemental maps into material phases.



Characterise the building blocks of matter

Optimised sensor design

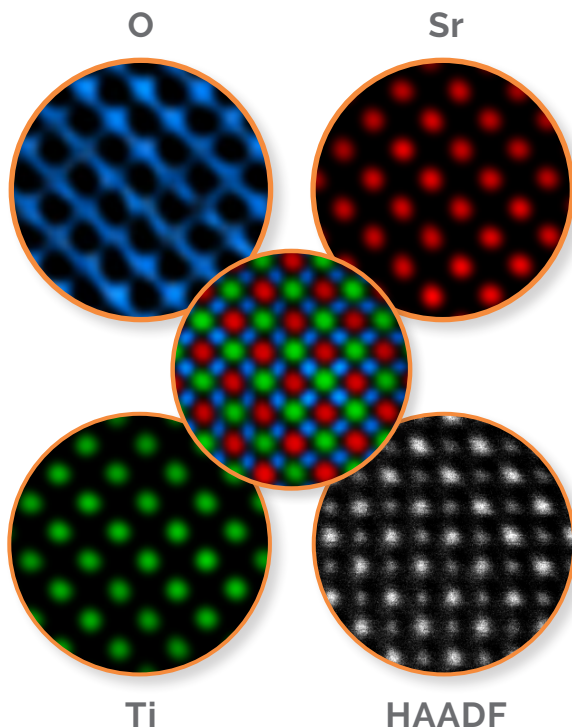
Positions a large SDD sensor closer to the sample increasing solid angle.

Large detector solid angle

Collect more X-rays for each second the specimen is under the beam.

New and improved drift correction

Ensures that you keep analysing the same structures while reducing dose into the specimen.



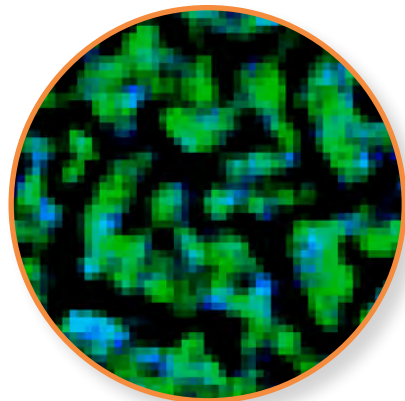
AZtecLive

Observe chemistry as it happens in real-time with **AZtecLive**

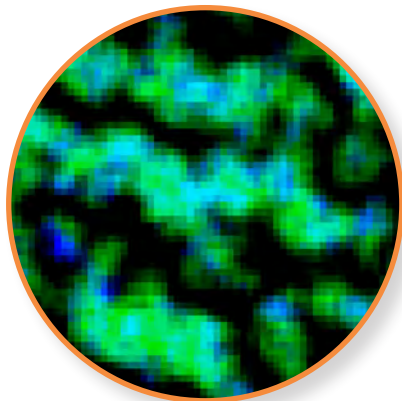
EDS mapping at high temperature

AuPd thin-film morphology changes with heating (Au=green, Pd=blue).

100°C



600°C

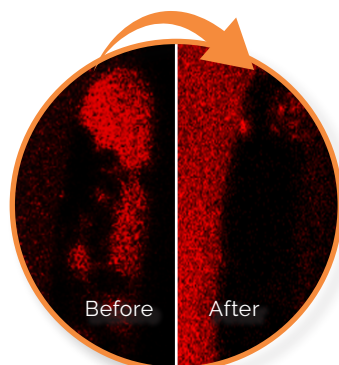


In situ Experiments

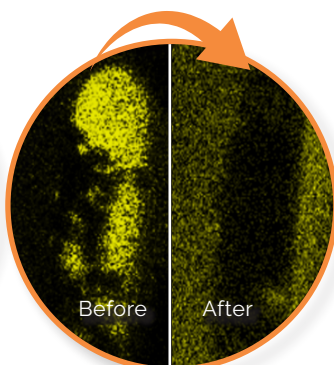
Observe real chemical changes during *in situ* experiments.

Extreme Electronics – reduce the effect of IR radiation on spectrum processing

Increased detector take off angle – minimises shadowing by *in situ* holders to maximise elemental information



Mn



S

Elementally map reactions in liquids

Mn and S dissolving out of a precipitate after exposure to water.

We are renowned for delivering outstanding support. Our global service hubs offer a full range of technical support to keep your detector, system and staff at maximum efficiency.



Keep your investment at peak performance. Multi-layered maintenance contracts suit your operational needs and budget.



Optimising you. Optimising your team. Omni-channel training enables everyone to deliver the right results every time.



Our global network of help desks guarantee a fast local expert response to any application or operational issue.



Our team of accredited support professionals proactively ensure your system is in optimal condition.



We're with you every step of the way to future proof your investment and ensure onwards data and system compatibility.

This brochure provides only a glimpse into the technology of Ultim Max and the applications unlocked by AZtecTEM. Find out more at:

[nano.oxinst.com /AZtecTEM](http://nano.oxinst.com/AZtecTEM)

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