



WORKSHOP

MAXIMISING SPATIAL RESOLUTION AND SURFACE SENSITIVITY FOR EDS
Windowless EDS optimised for low kV operation, for Light Element Analysis and High Spatial Resolution in SEM

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A new type of EDS detector, X-Max Extreme, has been developed for SEM. This detector uses windowless operation, high sensitivity electronics and optimised geometry to improve sensitivity of detection of low energy X-rays by 10 - 50x. In combination with ultra-high resolution FEG-SEM, chemical analysis is now possible for lighter elements and smaller structures.

Enhanced detectability for light elements, provides new information for borides, carbides, nitrides and oxides in a wide range of nano-materials, nano-structures and defects. Light elements can also be detected when present in lower concentrations such as boron in alloys and dopants in Si and other electronics. Using X-Max Extreme it has also become possible Li X-ray for the first time using EDS, this has been demonstrated in a number of materials including Li battery anodes and solid electrolytes. Further developments in Li analysis are actively being pursued. The capability to detect very low energy X-ray lines means much lower accelerating voltage can be used for elemental analysis. Characteristic lines for all elements can be excited at 2kV, even at 1 kV a large number of elements can be detected. This allows sub 10nm resolution and surface sensitive elemental analysis to be achieved in SEM.