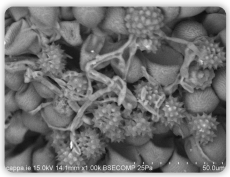
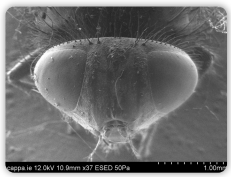
Scanning Electron Microscopy

Capability Case Study

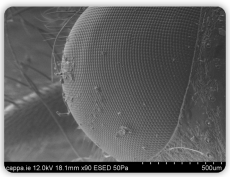
*CAPPA operates a variable pressure **scanning electron microscope** (SEM) [Hitachi S-37000N VP-SEM] equipped with **energy-dispersive X-ray spectroscopy** (EDS) [Oxford Instruments X-MaxN 80 T]. The microscope allows magnification up to x300,000 with a resolution of 20nm. The large chamber can accommodate samples up to 300mm in diameter and 110mm in height, and the variable pressure mode allows viewing samples in their natural or wet state, without the need for metal coating.*



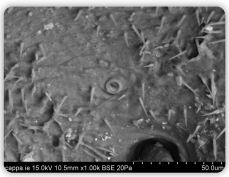
SEM image of daisy pollen (x1000 magnification)



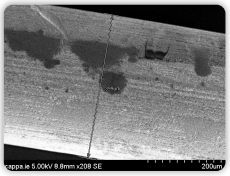
SEM image of a fly



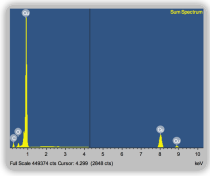
Higher magnification image of fly's eye



SEM image of a crab shell



SEM image of communications cable showing degradation



Element identification from same communication cable

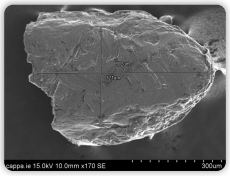
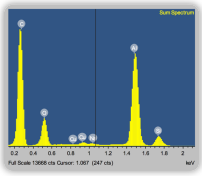
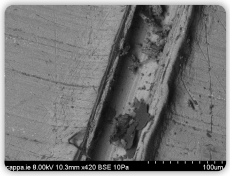


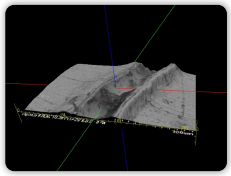
Image of contaminant particle



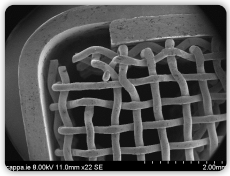
Element identification from same contaminant particle



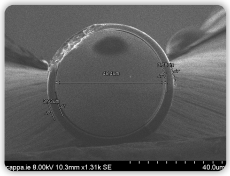
2D SEM image of groove in a metal plate



3D SEM image of same groove in a metal plate



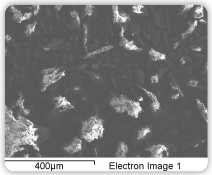
SEM image of damage in a wire mesh



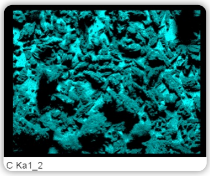
SEM image of fibre optic cable

Energy Dispersive X-Ray Spectroscopy (EDS)

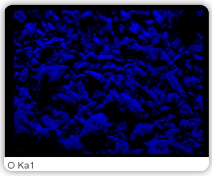
The EDS system works in tandem with the SEM to provide further characterisation of the elemental composition of samples. The analysis below was performed on a 1% (w/w) MgSt in MCC blend.



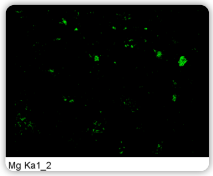
SEM of MgSt and MCC blend



Carbon distribution



Oxygen distribution



Magnesium distribution

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