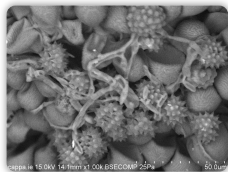




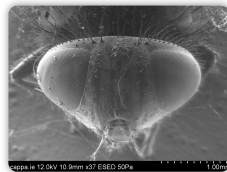
Scanning Electron Microscopy

Capability Case Study

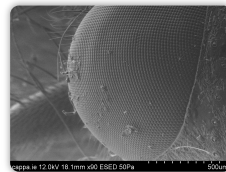
CAPPA operates a variable pressure **scanning electron microscope (SEM)** [Hitachi S-37000N VP-SEM] equipped with **energy-dispersive X-ray spectroscopy (EDS)** [Oxford Instruments X-MaxN 80 T]. The microscope allows magnification up to x300,000 with a resolution of 3-4nm. The large chamber can accommodate 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.



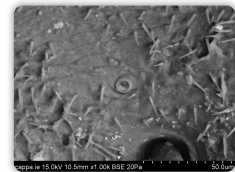
SEM image of daisy pollen
(x1000 magnification)



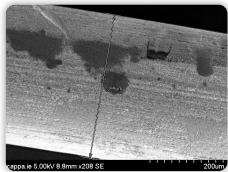
SEM image of a fly



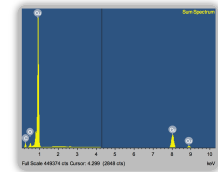
Higher magnification image of
fly's eye



SEM image of a crab shell



SEM image of communications
cable showing degradation



Element identification from
same communication cable

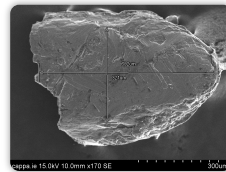
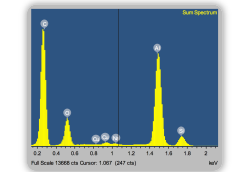
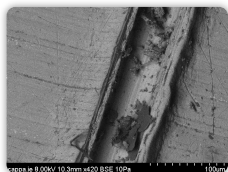


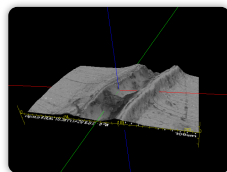
Image of contaminant particle



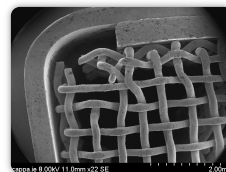
Element identification from
same contaminant particle



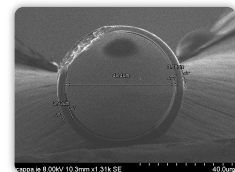
2D SEM image of groove in a
metal plate



3D SEM image of same groove
in a metal plate



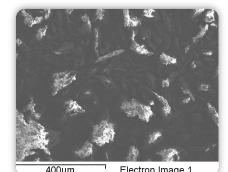
SEM image of damage in a wire
mesh



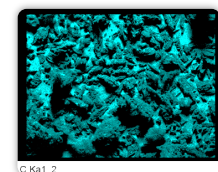
SEM image of fibre optic cable

Energy Dispersive X-Ray Spectroscopy (EDS)

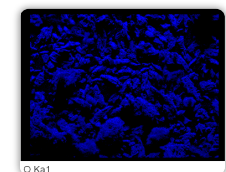
The EDS system works in tandem with the SEM to provide further characterisation of the elemental composition of samples. The analysis below was performed on a 1% (w/w) MgSt in MCC blend.



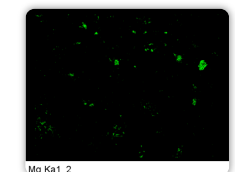
SEM of MgSt and MCC blend



Carbon distribution



Oxygen distribution



Magnesium distribution