

Laboratory Services **Scanning Electron Microscopy**



JSM-IT200

Scanning Electron Microscopy

Overview

A full forensic inspection can range from very large components through to tiny, specific details. Scanning Electron Microscopy (SEM) is an advanced method of microscopy which enables the assessment of minute details at high magnification.

Utilising a highly focused beam of electrons, high resolution and high magnification images can be generated which retain an excellent depth of field. This method of inspection allows for the imaging of very small details while retaining high definition and relative 3D characteristics compared with normal optical microscopy alone.

The ability to resolve small details means that SEM can be used for a range of other applications including contamination and corrosion analysis, coating inspection, fuel investigations, research applications and product development.

Imaging

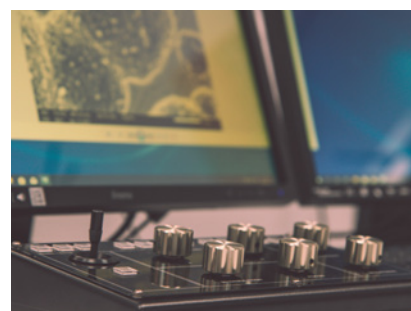
SEM is an important aspect of metallurgical investigations and is often used to assist in identifying mechanisms of failure. SEM enables the broadening of an investigation, beyond the magnification of conventional optical microscopy and by utilising the analysis software and a range of different detectors available. Our standard SEM imaging techniques include secondary electron and back-scattered electron modes.

Elemental Analysis

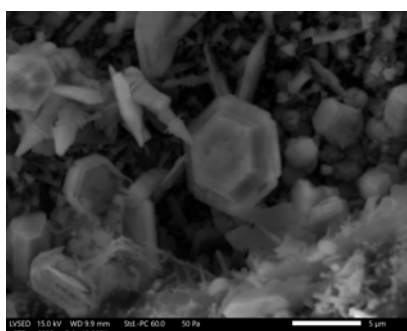
A by-product of the SEM imaging process is the generation of characteristic elemental energy-dispersive X-rays (EDX) which can be used as a quick sample analysis tool. Elemental information can be used for composition analysis of metals and materials, particle identification, contamination and corrosion assessment and coating inspection. EDX can be carried out in the form of spot analysis of specific areas and also through the generation of detailed maps which can show the distribution of elements in a sample area (particularly suitable for corrosion or coating analysis). Our microscope contains an advanced live EDX function where elemental data can be generated, in real time, while imaging areas of interest.



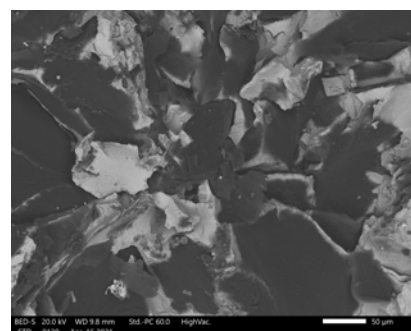
JEOL IT200 SEM unit



Imaging can be carried out using high vac and low vac using a range of detectors



Interaction of electron beam can generate high magnification, high resolution images



Example of brittle fracture

Whatever your technical or scientific requirements The Lab at Brookes Bell has a highly skilled and experienced team of experts ready to help you.

For more information please visit our website (thelab.brookesbell.com) or contact us on **+44 (0)151 652 0641** or at labenquiries@brookesbell.com.