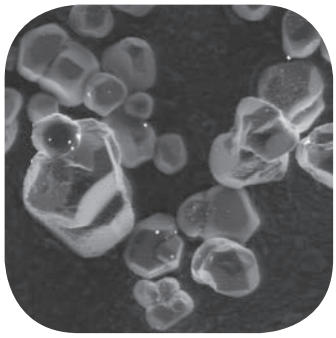
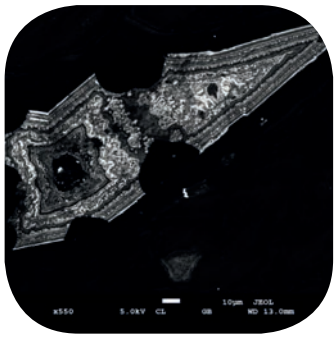
DEBEN

Tensile Testing | E-Beam Instrumentation | Detectors





Detectors

Centaurus, Cathodoluminescence & Backscattered Electron Detector

Applications:

- Phase contrast imaging
- Imaging un-coated samples
- Use alongside EDX detector
- Imaging of Minerals, Metals, Semiconductors

Features:

- Scintillator detector
- Cost effective solution available for most SEMs
- Exchangeable BSE or Cathodoluminescence (CL) tips
- High speed TV rate imaging
- Manual insertion & retraction

Centaurus is a scintillation type BSE or CL detector, this innovative product can generate either compositional (with topographic information) BSE images or with a quickly removable tip it can be converted to a CL imaging detector giving an additional function for little extra cost.

BSE

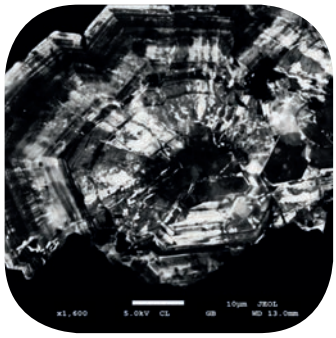
This mode provides image contrast as a function of elemental composition, as well as an element of surface topography. Backscattered electrons are produced by the elastic interactions between the sample and the incident electron beam. These high-energy electrons can escape from much deeper than secondary electrons, so surface topography is not as accurately resolved as for secondary electron imaging.

The production efficiency for backscattered electrons is proportional to the sample material's mean atomic number, which results in image contrast as a function of composition, i.e., higher atomic number material appears brighter than low atomic number material in a backscattered electron image.

Cathodoluminescence (CL)

CL imaging is widely used in geology, mineralogy, ceramic materials research and luminescent material development.

Centaurus is capable of producing high-resolution cathodoluminescent (CL) images of luminescent materials. Using a user exchangeable diamond turned reflector tip monochrome CL images can be easily collected and fed back into the SEM auxiliary video input. The photomultiplier may also be exchanged to select a particular wavelength range with sensitivity available from UV to deep IR at 185nm to 1200nm.



Backscattered Imaging Applications

Backscattered electron detectors produce an image with contrast (grey levels) as a function of elemental composition. This is particularly useful for identifying different elements in samples. They are commonly used in the semiconductor industry for imaging junctions and looking for defects, in Geology when investigating the composition of rocks and in the construction industry for monitoring the composition of concrete. BSE detectors are also an essential tool for those using X-Ray microanalysis by helping to determine the particular area of the sample to be analysed. Centaurus detectors will give excellent results with all types of SEM from Tungsten low vacuum to high end Cold Field Emission.

Cathodoluminescence Imaging Applications

CL emissions can provide general information on the trace elements contained in minerals or the production of mechanically induced defects in the crystals. Perhaps more importantly for the geologic context, the distribution of the CL in a material gives fundamental insights into such processes as crystal growth, replacement, deformation and provenance. These applications include:

- Investigations of cementation and digenesis processes in sedimentary rocks
- Provenance of clastic material in sedimentary and meta sedimentary rocks
- Details of internal structures of fossils
- Growth/dissolution features in igneous and metamorphic minerals
- Deformation mechanisms in metamorphic rocks.
- Discrimination of different generations of the same mineral as a result of differences in trace amounts of activator elements.

Outline Specifications

- Scintillator BSE/CL detector mounted to adjustable height SEM flange
- Fast TV rate imaging
- Excellent performance from 5kV to 30kV
- Manual insertion mechanism
- 300nm-650nm (for BSE), 185nm-850nm (for CL) photomultiplier as standard
- Pre-amplifier built into head unit
- Standalone video processor with brightness and contrast controls
- Video output adjustable for different SEM input requirements
- Voltage: 115V/230V
- CE and RoHS certified

Options

- Polished mirror for CL, phosphor BSE or YAG BSE tips
- 185nm-850nm Photomultiplier
- 400nm-1200nm Photomultiplier
- Bellows sealing (for HV FEG applications)
- Motorised insertion

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