SEM PRODUCT OVERVIEW

Are you are looking for high quality, technologically advanced SEM products but do not want to overstretch your budget?

If the answer is yes and this is your first contact with K.E.Developments, allow us to explain why scientists and manufacturers worldwide come to us.

We have the knowledge and experience

Built on the extensive technical knowledge of the company's founder, Mike Cowham, K.E.Ds product range has been enlarged over the past twenty five years to include a wide range of accessories for the Scanning Electron Microscope (SEM). Today K.E.D. employs over twenty skilled staff with an unrivalled collective experience in the field of SEM technology .

We can guarantee the quality of our products

All products from K.E.D. offer world leading performance and the company is proud to include all of the worlds leading manufacture's of SEM equipment amongst its clients. The inherent quality designed into our products is supported by a two year return to base warranty. The company is ISO 9001:2000 registered and vigorously enforces internationally approved test and safety standards including CE marking.

We offer value for money

K.E.D. designs and manufactures many of its components in house, leading to tight quality and cost controls, creating products of uncompromised quality and value for money. The cost of installation is also minimised as each product is supplied with a fully comprehensive manual.

We are committed to YOU

Staff at K.E.D. have a vast amount of experience to put at your disposal. We will be happy to discuss your requirements and will advise on which product will best suit your application and budget.

We promise continued excellence

K.E.D. is constantly striving to bring new, innovative products to the marketplace. This is made possible through close liaison with our OEM clients and research groups throughout the world.

Detectors

For backscattered Electron Detection, K.E.D. has the detector to suit you. Many are available with fixed, push/pull, swing or motorised retraction, and the option of bellows sealing.

CENTAURUS
"The Complete Detector System"

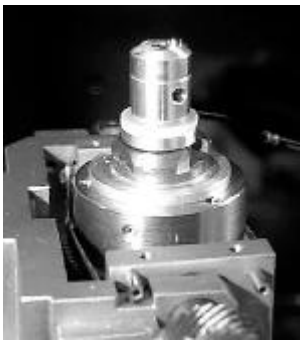
Designed as a scintillation type BSE detector, this innovative product can generate both compositional or topographical images. However it is highly versatile as it possess a quickly removable tip, which allows it to be converted to a Cathodoluminescence or STEM detector in seconds, giving two additional functions for little extra cost without compromising the quality of the results obtained. It also gives excellent images down to below 1kV – ideal for those studying fragile and beam sensitive samples. Given its simple conversion to other functions, we believe that you will agree **CENTAURUS** is indeed "The Complete Detector System"

Solid State Backscattered Electron Detector

This state of the art BSE detector uses a silicon diode exclusively manufactured to our own specific design and characterised for electron detection. It is highly compact with a four quadrant annular construction which achieves almost perfect symmetry virtually eliminating topographic information and producing a pure compositional signal. However, if topographic information is required the ability to select quadrants allows this to be done. The diodes are available in a range of sizes and sensitivities permitting use down to 1 kV and below.

STEM Detector

All STEM Detectors from K E Developments can be connected to our existing solid state BSE systems *via* the push/pull retraction arm or swing arm using a simple conversion kit. Please note that the **CENTAURUS** can also be converted to a STEM detector using a simple to fit tip. The single grid is the simplest form and two heights of top section are supplied so that either light or dark field images can be achieved. Up to twelve grids can be fitted into the KED STEM grid holder that is supported by the specimen holder for multi specimen analysis.



Infrared Cathodoluminescence (IRCL) Detector

Many semiconductor materials are known to produce Cathodoluminescence signals when studied by SEM. It is a phenomenon that yields detailed information that cannot be revealed by any other imaging methods such as impurities or defects in crystalline structure. The infrared system comprises an elliptical mirror, where the detector and specimen are placed at each of the two focal points, resulting in minimal loss of infrared light. IRCL detectors can be retrofitted to most existing K.E.D solid state BSE detector systems.

Microchannel Plate (MCP) Detector

Non-conducting, insulating or fragile specimens can be seriously compromised as the deposited charge from the incident electron beam causes radiation damage. This problem is usually avoided either by sample coating, which causes its own problems or by using a low incident voltage. As a backscattered electron detector the MCP detector can produce compositional or atomic number contrast in addition to topographic information at incident voltages as low as 1kV. It can also be used as a secondary electron detector.

Detector accessories

- **12 Position STEM Grid Holder**
- **Backscattered Electron Test Sample**
- **Motorised Arm.** This allows the motorised retraction of detectors that are supplied in an unmotorised format as standard.
- Solid state backscattered detector with Windows© control. The integrated software allows the control of the operating parameters, via a drop down menu. It also contains a facility to control motorisation if fitted.
- **Bellows** sealing for high vacuum applications.

Optical Surveillance

It is impossible to monitor the position of the detector relative to the specimen or vice versa once the SEM is in operation, something that is vital not only to achieve the best possible results but also to prevent damage to expensive equipment. Surveillance equipment is therefore essential in the form of "in- chamber" cameras.

K E Developments has a range of "chamberscope" cameras for use with most makes of SEM. These use low levels of infrared illumination not normally detected by the SEM detector thereby allowing simultaneous operation. Windows© control is available for all surveillance products.

Infrared Chamber scope GW

The GW (General Workhorse) is the low cost entry level product in the optical surveillance range and is mounted external on the SEM chamber.

GW IRCS

Zoomscope Camera

Infrared Chamberscope STD

Designed to be mounted through a port on the outer surface of the chamber with easy focus control, this camera offers continuous monitoring of the chamber interior.

Infrared Zoomscope

Also designed to be mounted via an external port, this camera is mounted at a high angle with a 10:1 zoom facility allowing either a general chamber view or close scrutiny of the sample.

Infrared Chamberscope 25

This is the counterpart of the **Infrared Chamberscope** in that it is also mounted through a port on the external surface of the chamber, This allows the camera to be mounted anywhere in the chamber. However it has an ultra compact design and requires a mounting port of only 25mm inside diameter.

Infrared Peeperscope

This is designed to provide a close up view of the specimen surface. It is used to optically locate areas of interest and relate these to the scanned area.

Accessories

K.E.Developments has developed a range of useful accessories, which are all designed to make your working day just that little bit easier and more productive.

Printerface Software

This package allows the upgrade of older scanning electron microscopes, by enabling computer control and manipulation of image production and printing.

Probe Current Meter

This device measures the absorbed current of the sample in the range of 1pA-2 µA, which allows the accurate reproduction of results. It can also be used to measure probe current using the supplied fixed Faraday cup.

Retractable Faraday Cup

This device is used with a **Probe Current Meter** to measures the probe current and hence allows the accurate reproduction of the spot size between samples. It can be used in conjunction with either backscattered electron or Xray analysis. It can also be retracted when not in use.

Specimen Temperature Controller

Heats or cools the sample whilst in the chamber in the range of -30°C to +50°C. This enables the analysis of sensitive or water loaded samples whereby the low temperature induced slows the speed of evaporation preventing desiccation of the sample.

Specimen Current EBIC Amplifier

Used for analysis of silicon devices and semiconductors.

Trace Element Detector

Coupled with an EDX detector, the trace element detector enhances weak spectra using Xray fluorescence.

Stem Grid Holder

The 12-position holder is designed to carry up to 12 standard 3.05mm TEM grids for analysis in the SEM.

Mounting Plates

Specialist plates are used for a wide variety of applications in the SEM. These allow more flexibility in the range and amount of accessories that can be fitted and/or used in the chamber at any one time.

Test Samples

This allows the performance of Backscattered Detectors to be verified.

Integrated Test Sockets

Test Sockets are widely used in the semiconductor industry for examination of integrated circuits and other semiconductor devices in the SEM. In particular they are used in failure analysis