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DATASHEET

RGB Cathodoluminescence detector

Real color sample data at your fingertips

The RGB Cathodoluminescence detector provides real color CL data without compromising on ease of use, simultaneous detection or field of view, by using a novel, flat detector design.

Researchers in geology, optoelectronics, failure analysis, ceramics, glass and other fields use cathodoluminescence (CL) detection as a unique method to highlight sample properties not visible with conventional electron or X-ray imaging techniques. By correlating CL data to topography, crystallography and elemental information, a better understanding of photonic properties, composition, material quality or sample history is obtained.

Conventional CL detection is based on a mirror placed between the sample and the final lens. This mirror needs to be accurately aligned to a long (fixed) working distance to efficiently detect light, while limiting the SEM field of view, and limiting or blocking detection of electrons and x-rays. This requires subsequent scans with the detector inserted/retracted to capture all the necessary data.

The RGB cathodoluminescence detector solves these issues using a flat design that slides between the sample and the final lens, much like a retractable backscatter detector. The large detector area eliminates the need for any optical alignment and does not limit the field of view. Furthermore, simultaneous detection of secondary electrons (SEs), backscatter electrons (BSEs) or x-rays is possible, enabling correlation of CL data with SE, BSE and energy-dispersive x-ray spectroscopy (EDS) in only a single scan of the electron beam.

Integrated in the user interface of the microscope, the RGB cathodoluminescence detector makes color images available as soon as the beam is scanning. This makes the detector a unique asset to multi-user labs requiring CL data and correlation with worry-free operation.

Key Benefits

Easiest-to-use CL detector with pneumatically retractable mechanism and user interface integration. No optical alignments necessary.

Shortest time to results with real-time RGB color display

Freedom in operation: wide field of view and flexible working distance range

Ultimate compatibility: simultaneous acquisition of CL with SE / BSE in-chamber and in-lens detection, and EDS, in high vacuum or low vacuum.

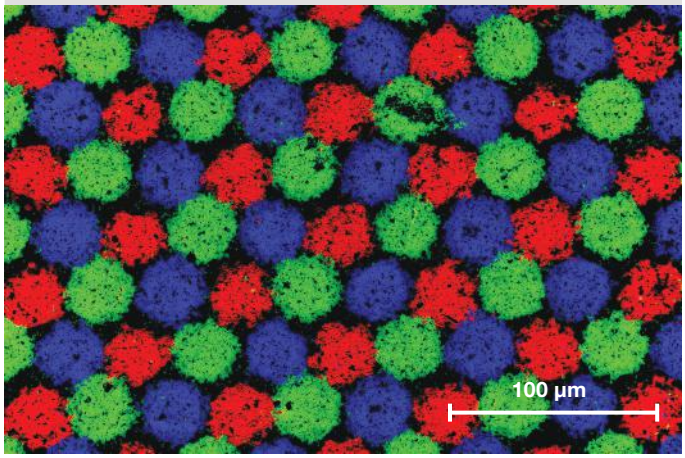

Figure 1. CRT monitor. The image illustrates real color detection of red, green and blue.

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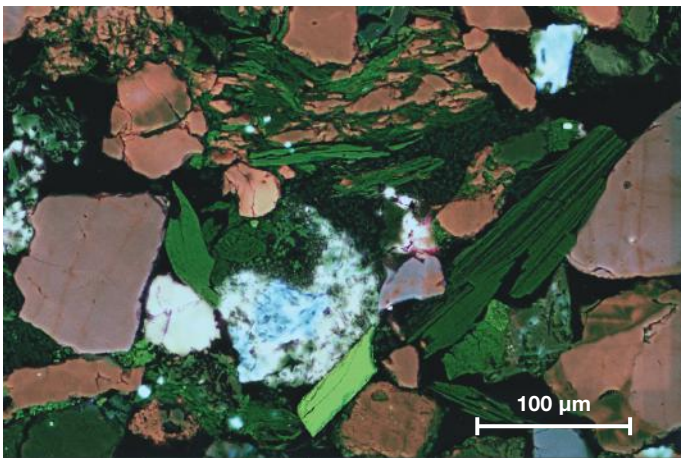

Figure 2. Sandstone. CL contrast can be used to differentiate between minerals that cannot always be identified with BSE or EDS, such as such as muscovite (mica) and illite which have similar composition

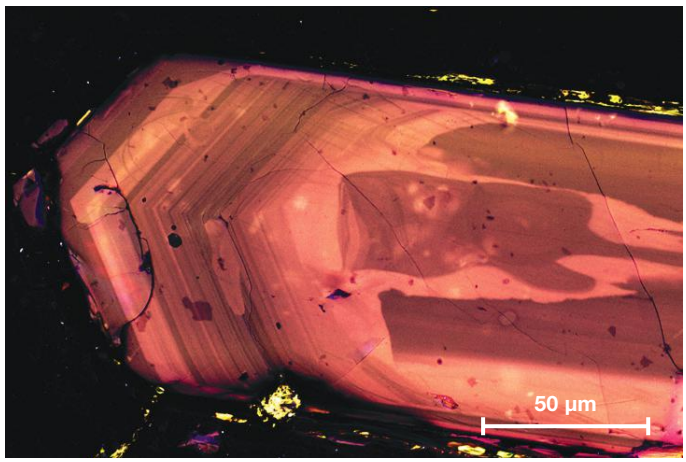

Figure 3. Zircon. Zonations provide information about the history of this zircon grain. Sample courtesy: UC Santa Cruz

Essential specifications

Detector

- Detector segments for simultaneous red, green, blue (RGB) and panchromatic CL acquisition with independent gain
- Wavelength range for panchromatic channel: 350 – 900 nm
- Pneumatic retractable detector mechanism
- Large field of view (detector does not limit maximal SEM field of view)
- Flexible working distance range; allows using a short working distance without the need for retraction

Software integration

- Fully integrated in SEM user interface, including safety restrictions
- Color images from either real color calibration or enhanced color contrast
- Compatible with MAPS tiling and stitching for large area acquisition with color support (correlative workflow license required)
- CL signal is available to external (analytics) software

Compatibility

- SEM detection is not compromised for in-chamber ETD detector or in-lens SE/BSE detectors
- Allows simultaneous EDS mapping (up to 2 opposite EDS detectors)
- Low vacuum compatible for imaging of non-conductive samples
- Compatible with Quattro and Apreo SEMs

Find out more at **Thermofisher.com/EM-Sales**

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