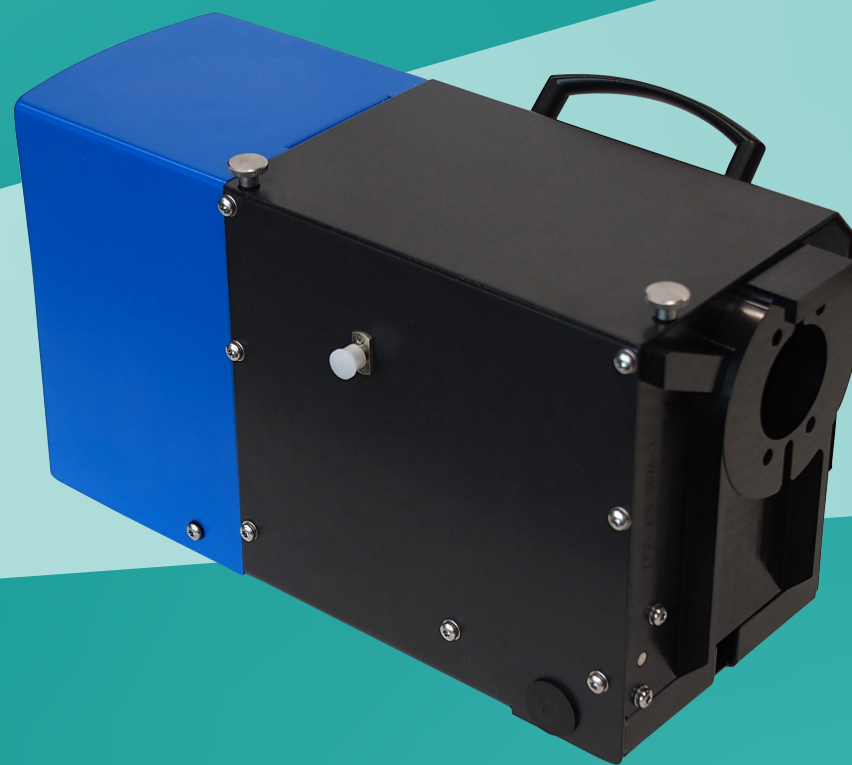


SPARC Compact specifications sheet

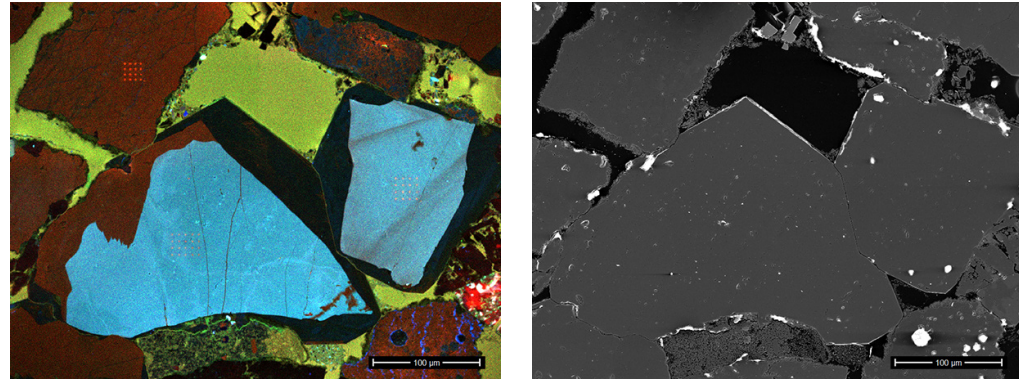
Understand more about your sample in less
time with a compact, easy-to-use, turnkey
cathodoluminescence detector



Introduction

SPARC Compact is a high-end cathodoluminescence intensity detector, with colour-filtering capabilities. Easily integrated in SEM, SPARC Compact is a reliable solution for providing insights into processes such as crystal growth zonation in geological samples, and defect structures in semiconductors.

This system is highly modular, which means that it can be upgraded and enhanced as your research evolves and moves forward. And just like the system, Delmic's team is always there to support you and make sure that the high-quality results you acquire bring you one step closer to your goal.



RGB CL intensity (left) and SE image (right) of a quartz sandstone. The CL reveals different quartz grains, overgrowth and intragranular features such as cracks. Image courtesy of Dr. B. G. Haile (University of Oslo)

Key benefits



SEM Integration

The SPARC system is easily integrated with a SEM of your choice.



Align easily

Our ODEMIS software makes the procedure of alignment easy and straightforward.



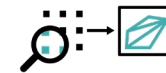
Customize your system

Modify the SPARC system in a matter of minutes with exchangeable modules, gratings and mirrors.



Enhance your research

Understand the structural composition and luminescence properties simultaneously.



Analyze easily and acquire insights

Open-source free software ODEMIS makes data acquisition and analysis painless and easy.

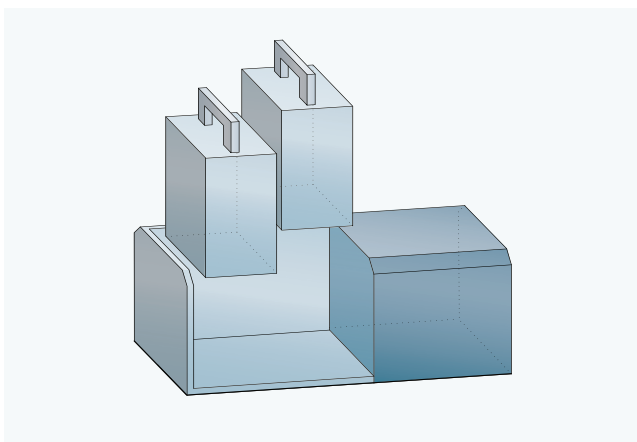


Reproduce and compare measurements

Fully motorized mirror stage and automatic alignment.

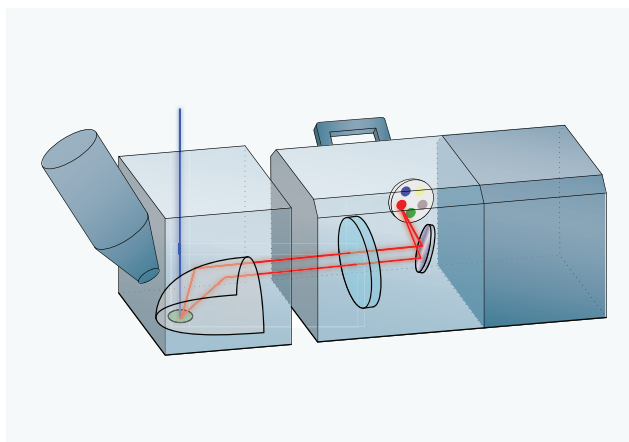
Add functionality

Interchange optical modules to add functionality: choose a specific UV or IR sensitive module or fiber outcoupling. A photomultiplier tube with a motorized filter wheel allows performing fast panchromatic and colour-filtered CL intensity mapping.



Start imaging

Acquire point-by-point panchromatic and monochromatic color-filtered images with high spatial resolution. Combine different monochromatic images for real and false color RGB CL imaging. The efficient parabolic mirror CL collection optic decreases measurement time and reduces artifacts.



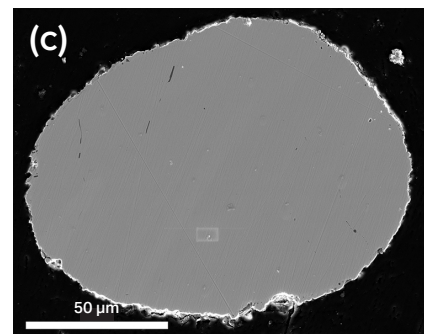
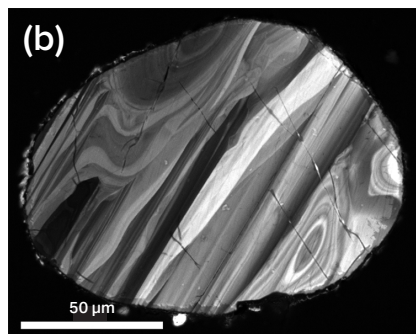
Application areas

Geology

- Zircons
- Sedimentary Rocks
- Microorganisms
- Meteorite Impacts
- Gemstones

Materials science

- LEDs
- PV Materials
- Plastics/ Polymers
- Paints
- Medicine
- Phosphors
- Oxides



(a) Large area CL intensity map. Sample and image courtesy of Dr. Cameron Davidson (Carlton College). (b) Zircon crystal CL intensity data. (c) SE data of the same area. Sample courtesy of Siri Simonsen and Bjørgunn H. Dalslåen (University of Oslo)

CL Solutions products

	 SPARC Compact	 SPARC Spectral	 JOLT
Panchromatic intensity mapping	✓	✓	✓
RGB (colour-filtered) intensity mapping	✓	✓	✓
Spectroscopy	—	✓	—
Angle-resolved imaging	—	✓	—
Polarimetry and polarization-filtered spectroscopy	—	✓	—
Hyperspectral imaging	—	✓	—
Lens-scanning energy-momentum (LSEK) imaging	—	✓	—
Time-resolved imaging	—	✓	—
Compatibility	With all SEMs	With all SEMs	With all SEMs
Light-collection geometry	Paraboloid mirror	Paraboloid mirror	In-chamber CL detector
Software	Open-source free software ODEMIS	Open-source free software ODEMIS	App combined with the SEM control computer
Application fields	Geology, materials sciences	Geology, materials sciences, nanophotonics	Geology, materials sciences



sparc spectral

Cathodoluminescence by Delmic



Obtain measurements quickly and analyze data easily with the most user-friendly, flexible, and powerful cathodoluminescence detection system.

[LEARN MORE](#)



jolt

Cathodoluminescence by Delmic



Fastest and simplest way to inspect geological, optoelectronic and other materials with cathodoluminescence detection.

[LEARN MORE](#)

System specifications

General

- High contrast in imaging and fast image collection
- Modular design & easily upgradeable to full angle-resolved and hyperspectral capability
- Wide spectral range
- Scan large fields of view with field stitching feature
- Possibility of fiber coupled (hyper)spectral imaging for small SEMs

Mirror

- Precision translation stage with mirror mount
- Stepper with motors with computer-controlled drivers → x,y accuracy < 1 μm
- Automated mirror alignment
- Controlled waviness diamond-turned, aluminium half-parabolic precision mirror → collection angle 1.49π sr. (working distance 0.5 mm), surface roughness <20 nm, NA = 0.97
- Motorized retractable mirror stage, compatible with other SEM detection modalities such as BSE and EDS

Optics

- Lightweight optical boards in light-tight enclosure with SEM mounting assembly
- High-efficiency optics
- Exchangeable optical boards for added functionality (such as specific UV or IR sensitivity and fiber outcoupling)
- A photomultiplier tube with a motorized filter wheel allows performing fast panchromatic and colour-filtered CL intensity mapping.

Installation

The retrofit will be done by an authorized DELMIC Microscopy service engineer and includes:

- Mounting of system on SEM instrument
- Alignment of mirror stage
- Demonstration of operation

Software

Open-source and free software ODEMIS is a powerful tool for (RGB) intensity data visualization. Easily overlay intensity data with SEM images. Move on with further data processing by exporting data to analysis software packages such as MATLAB, Python, ImageJ, Photoshop, Origin, or Excel.

- Output in either HDF5, PNG, OME-TIFF, or raw txt files.
- Acquisition of intensity maps based on point-by-point scans
- Drift correction
- Visualize intensity data as false color RGB image
- Overlay intensity data and SEM images
- Subtraction/manipulation of image file (such as system response) to view corrected spectra
- Export of data to software such as MATLAB, Python, Origin or Excel or imaging processing software for further analysis.

Interested?

For more information on this topic visit www.delmic.com

About

Delmic is a passionate high-tech company based in Delft, the Netherlands that develops powerful and user-friendly solutions for light and electron microscopy. Our systems are used by researchers and companies all over the world in fields ranging from life sciences, geology, material sciences to nanophotonics.

The SPARC Spectral system is a unique cathodoluminescence (CL) solution which allows you to acquire high-quality CL data in a fast and simple manner. The system is flexible, modular and can be customized according to your research needs.

Stay up to date

Subscribe to our newsletter to stay up to date with our latest CL developments

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