

Development of a cathode luminescence detector for EPMA to obtain color CL images

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A cathode luminescence (CL) detector for an EPMA was developed and has a function to insert optical filters for color CL images. The detector was specifically design for the JEOL JXA-8800, however other models of the JEOL EPMA can use the detector. An EDS port of the EPMA is used to fit the detector. As the space for the port is limited, it is necessary to have a small size detector including the color filter changing device.

Monochromatic CL images are obtained with the detector without color filters. The color CL images contain valuable information compared to the monochromatic images. As the EPMA has very limited space around objective lens, CL light introduced to the detector is limited compared to the SEM CL. Thus we have to use higher electron beam current to obtain brighter CL from the samples. We typically use about 50nA beam current.

For the evaluation of the CL detector, we have selected several samples. Sandstone samples and zircon grains were evaluated with the color CL images. Color CL images clearly show overgrowth textures around the quartz grains for the sandstone, indicating importance of the color CL detector.