

An Inexpensive Cathodoluminescence Spectrometer which has been Adapted to an MBX Cameca Electron Microprobe

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There has been a growing demand for cathodoluminescence studies of minerals, particularly zircon, in order to image compositional zoning in preparation for SHRIMP ion probe geochronology studies. This demand has now expanded into a requirement for semi-quantitative cathodoluminescence spectrographic analysis. A low-cost micro-computer-based solid state multichannel analyzer, integrated with a linear CCD-array silicon detector responsive from 200-1100 nm, has been interfaced within the optical chain of a MBX Cameca microprobe. This allows for maximum collection of focussed light, coincident EDS and WDS analyses, and backscattered electron imaging. This system allows for "black spectrum" subtraction, time integration, and region of interest spectrum stage and beam mapping. It has been tested on well documented apatite standards, zircon, meteoritic glasses and minerals, an assortment of other luminescent minerals, and space shuttle window glass.

Cathodoluminescence spectra were collected at various operating conditions and the data were processed with different time integrations, types of peak smoothing and averaging. Spectra from these experiments and the relevant technical information will be displayed along with spectra from other systems.

In addition, information will be presented concerning other upgrades done at the laboratory (operating systems for MBX and SX50 microprobes and S200 SEM, and an offline stage integrated with the SX50).