

HISTORY

The Oklahoma State University Electron Microprobe Laboratory has been in operation since 2002, when ConocoPhillips donated a JEOL 733 Electron Microprobe to the laboratory of Dr. Elizabeth Catlos in the School of Geology.



The donation of the machine was an important occasion because OSU recognizes that to provide its students with exceptional academic experiences, conduct scholarly research and other creative activities that advance fundamental knowledge, and disseminate knowledge to the people of Oklahoma and throughout the world, gifts like the electron microprobe are needed.

The machine is a key piece of equipment for the research and education OSU students, faculty and broader community.

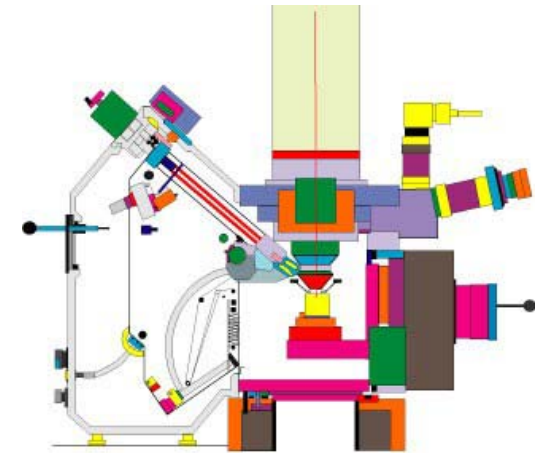
WHAT IS AN ELECTRON MICROPROBE?

Electron microprobes image and analyze solid samples that are stable in a vacuum environment.



Electron microprobes can be used as cameras to photograph specimens beyond the capabilities of ordinary optical microscopes. The pictures appear very real, as if a regular camera photographed them. In addition, these machines can identify elements present in a mineral as small as 5 thousands of a millimeter with a small degree of error. Analysis is non-destructive and is used for detailed study of important features in rocks or other solid materials.

OSU Electron Microprobe Laboratory

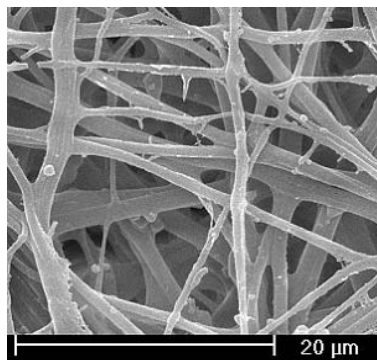


**OSU School of Geology
105 Noble Research Center
Stillwater, OK 74078
405-744-9246**

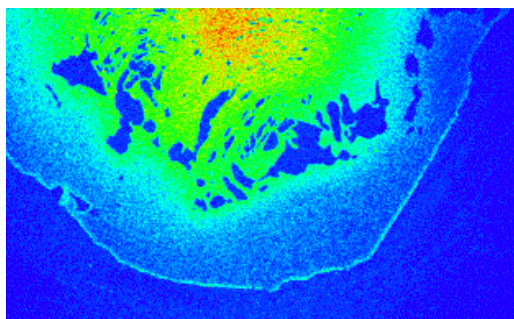
**Dr. Elizabeth Catlos, Director
catlos@okstate.edu
fp.okstate.edu/catlos/eprobe**

HIGH RESOLUTION SCANNING ELECTRON MICROSCOPY

The OSU Electron Microprobe can be used to take high resolution, high magnification photographs.



This picture is a secondary electron image of the inside of an eggshell.



This is a colored X-ray element map of a Himalayan garnet showing only the distribution of Mn. (width ~1mm; red= high Mn; blue=low Mn)

ENERGY DISPERSIVE X-RAY SPECTROMETRY (EDS)

For quick and easy elemental analysis of samples.

- One micrometer spot analysis
- X-ray element mapping using EVEX software
- Simultaneous detection of all elements from Na to U.
- Minimum detection limit of 0.1% by weight

WAVELENGTH DISPERSIVE X-RAY SPECTROMETRY (WDS)

For more detailed elemental analysis of samples.

- One micrometer spot analysis
- Four spectrometer crystals (LIF, PET, TAP, LDE2)
- 68 mineral standards available
- Capable of analyzing elements from Na to U.
- Compositional analysis using SAMX software
- Minimum detection limit of 0.1% by weight

PRICE INFORMATION

Machines in the OSU Electron Microprobe Laboratory are available for use at cost to any individuals associated with academic and public institutions, and non-academic organizations.

INTERNAL USERS (Academic)

- Daytime, with Technician \$60/hr
- Daytime, without Technician \$30/hr
- Evenings, without Technician \$15/hr

EXTERNAL USERS (Corporate)

- Daytime, with Technician \$80/hr

EXTERNAL USERS (Private)

- Daytime, with Technician \$60/hr

SAMPLE PREPARATION

- \$15/sample (clean + coat)
- Petrographic characterization \$6/hour