DEPARTMENT OF GEOLOGICAL SCIENCES
Isebe Lezululwazi Zomhlaba · Departmente van Geologiese Wetenskappe

Electron Probe lab
Department of Geological Sciences
13 University Avenue South, Upper Campus
University of Cape Town
Rondebosch 7701
South Africa

Electron probe lab booking form

Know your spectrometers:

EDS spectrometer – rapid phase identification and chemical analysis

An EDS spectrometer - short for Energy-Dispersive X-ray Spectrometer - is used on an electron probe to identify and quantify the elements present in a small volume of a sample.

- **Qualitative analysis** – to identify which elements are present in a mineral.
- **Semi-quantitative or quantitative analysis** – to estimate the relative or absolute concentrations of those elements (though less precise than wavelength-dispersive spectroscopy, WDS).
- **Elemental mapping** – to produce spatial maps showing the distribution of different elements across a region.
- **Rapid screening** – for identification of unknown phases, zoning, or unexpected elements before detailed WDS analysis.

Benefit: Rapid identification of elements in a small volume of material. No calibration/setup required. Recommended for users who do not need publication quality data and those who do not know what phases are present in their samples.
Booking time restrictions: No restrictions here. Time can be booked on an hourly basis for a minimum of 2-hours.

WDS spectrometers – high precision chemical analysis of minerals

A WDS spectrometer — short for Wavelength-Dispersive X-ray Spectrometer — is the high-precision analytical detector used to measure the concentrations of elements in a sample with high accuracy and sensitivity. The UCT probe is equipped with four WDS spectrometers.

- **Quantitative microanalysis** — determining precise elemental concentrations (typically accurate to 1–2%).
- **Resolving overlaps** — separates peaks that overlap in EDS spectra (e.g., Ti–V, Fe–Mn).
- **High-quality element mapping** (though slower than EDS).

Benefit: High-quality publication level data.
Booking time restrictions: WDS spectrometry requires careful calibration that takes time, thus, we require a minimum of 8 hours (i.e., full-day) booking to use WDS spectrometers. A full day booking including any overnight automation of the instrument with be charged at 10 hours for the day.

User information

- UCT based users must be at the lab for the beginning of their session.
- Samples requiring carbon coating must be dropped off in the lab at least 24 hours prior to scheduled session.
- External users are encouraged to visit the lab for analyses. If this is not possible, detailed maps and instructions for analyses must be sent with samples. Users must also be available online in case the lab manager has questions about the samples. Failure to be available may result in loss of time at the expense of the user.
- All samples must be properly prepared and documented before the scheduled session. Loss of time based on poorly prepared samples may result in loss of allocated time.
- Please submit analysis requests at least 2 weeks in advance. Urgent requests will be considered depending on availability.
- EPMA personnel do not advise students on analytical strategy nor interpret results; advisors shall properly prepare their students prior to arrival at the lab.
- The facility and relevant staff must be acknowledged in any publications or presentations resulting from this work.

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Rate* structure for analytical work in the EPMA lab - valid for 2026.

Category A	Standard rate	R1400/hour
Category B	Academic rate: non-collaborative (45% discount)	R750/hour
Category C	Academic rate: collaborative / Student rate (60% discount)	R550/hour
Category D	Full week booking**	20% discount

*Please note, all rates are excluding VAT.

**Full week bookings are charged at a maximum rate of 10 hours a day but includes overnight automation so that the probe can run 24 hours a day if needed.

Please complete the following information and send to lab technician Nic Laidler at nicholas.laidler@uct.ac.za and lab manager Geoff Howarth geoffrey.howarth@uct.ac.za

1. User information / Rate
Name:
Institution/Department/Company:
Primary Contact Email:
Primary Contact Phone:
Supervisor/Principal Investigator (if applicable):
Supervisor's Email (if applicable):
Rate request (see above):

2. Project details
Project Title:
Is this a new project for this facility? Yes / No
Have you used this facility before? Yes / No

3. Sample information
Total number of samples:
Sample type: [e.g., Thin section, polished mount, ceramics, metals]
Sample format: [e.g., Standard 26x46mm thin sections, 25mm diameter polished mounts]
Sample composition: Please list the minerals to analyse.

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4. Analytical requirements

Requested booking date(s): [See online google calendar]

Spectrometer needed: [EDS or WDS or both]

Estimated session length: [8 hours minimum for WDS or 2-8 hours for EDS per day; please reach out to lab manager or technician if you are not sure]

Type of analysis: [spot analysis, mapping, line scans]

Other: Please specify.

Elements to be analysed: Please list the elements you wish to quantify (e.g., Si, Al, Fe, Mg, Na) for each mineral you would like to analyse.

Special instructions or comments:

Signature

I have read and understood the user agreement and requirements of the lab

User Signature:

Supervisor Signature (if required):

Date: