

## **EarthScope Geochronology Graduate Student Award Program UCLA National Ion Microprobe Facility**

### **Laboratory Facilities and Operation**

The UCLA National Ion Microprobe Facility offers students access to in situ analysis for a broad range of stable isotope ratio and U-Th-Pb geochronologic measurements utilizing two high resolution, high sensitivity CAMECA ion microprobes (<http://sims.ess.ucla.edu>). Geochronology applications include U-Th-Pb and U-series dating of accessory minerals (zircon, monazite, baddeleyite, sphene, allanite and apatite) and isotope ratio analysis is available for H, Li, B, C, N, O, Mg, Si, S, Cl, Ca, Ti, Cr, Fe, Ni, Sr, Hf and Pb isotopes.

Student visitors are expected to be present at UCLA to participate in the generation of their data and acquire the necessary background information with which to interpret results. Typically, students will have prepared their samples prior to arrival, with our staff available to consult beforehand to optimize the process and provide mineral standards. At UCLA, students have access to our Tescan SEM with EDS and two CL detectors for sample imaging and characterization. In rare cases where prep facilities are not available at the home institution, the student may use our sample processing equipment (e.g., rock crusher, disc mill, heavy liquids, isodynamic separator, mounting materials, etc.).

### **Time Frame**

Students are provided with mounting media appropriate to their application (i.e., grain mounts, thin sections, etc.) and are expected to arrive at UCLA prepared to undertake SEM imaging and sample coating (typically applied in a Au sputter coater). Background information is available at <http://sims.ess.ucla.edu/resources/SAMPLEPREP.php>. All samples must be mounted in 1" diameter disks to permit entry into the SIMS instruments. The student is assigned a "minder" who introduces the instrument and supervises the early phase of operation. Once initial standardization is complete, the student operator typically becomes quasi-comfortable with analysis within a few hours, but has access to assistance as needed. Because the instruments are capable of 24 hour operation, undertaking analysis projects with 2 to 3 personnel maximizes the available opportunity and thus students are encouraged to have their supervisors and/or research colleagues accompany them to provide assistance. All data acquired are reduced during and immediately following analysis sessions. Analysis time varies substantially among applications. For example, a U-Pb spot age analysis takes ~20 min whereas a high resolution ion image could take 8 hours. Please contact us for a time estimate for the specific application being requested.

We schedule both ion microprobes on a monthly basis and can in most cases schedule a visit within a one to two month time frame. We also encourage projects outside the scope of our provision of routine analysis on a developmental basis.

### **Costs**

For EarthScope awardees, access to the ion microprobe costs \$120/hour for the first 12 hours with no cost for the subsequent 12 hours. Currently, no charges are levied for use of our SEM.

Local accommodation and its associated costs can be obtained from <http://sims.ess.ucla.edu/resources/hotels.php>.

### **Staff**

We suggest that the applicant contact the facility personnel closest in research interest to the proposed project. Geochronology: Mark Harrison ([tmh@epss.ucla.edu](mailto:tmh@epss.ucla.edu)), Matt Wielicki ([mwielicki@gmail.com](mailto:mwielicki@gmail.com)); stable isotopes: Ming-Chang Liu ([chondrite@gmail.com](mailto:chondrite@gmail.com)), Kevin McKeegan ([mckeegan@epss.ucla.edu](mailto:mckeegan@epss.ucla.edu)); Trace elements: Beth Ann Bell ([ebell21@ucla.edu](mailto:ebell21@ucla.edu)).