# Lab Education Plan

The UCLA luminescence lab has one Riso TA-DA-20D machine with dual laser single-grain reader attachment. The lab has facilities and software available for processing, measuring and analyzing OSL, IRSL and TL measurement protocols. Single-grain capabilities are possible for feldspar IRSL and OSL (green laser), and for quartz OSL (green laser). Single aliquot multiple grain capabilities include IR diodes for feldspar and blue diodes for quartz or feldspar, in addition to thermoluminescence (TL) capabilities. Visiting student proposals will be matched with an appropriate member of the UCLA luminescence research group who can provide expertise in the relevant area of study. The UCLA researcher will then provide help designing and implementing a measurement protocol and with data processing, including choosing an appropriate age model for single-grain data, if applicable.

**Time frame**

The primary constraint on time to completion is machine availability. Prospective student visitors should expect to schedule a visit three to six months in advance so that our lab can schedule around ongoing projects. For projects with single-grain measurements, student visitors should expect approximately 10 hours of machine run-time per 100 grains analyzed. Another way to think of this is 200 grains per day. The total amount of machine time granted to the student will depend on the scope of the project, but a rough estimate for a maximum number of grains analyzed is 1000 to 2000 grains for a 1 to 2 week stay. Note that many K-feldspar grains are highly sensitive, with yields of up to 95% of grains providing a useful signal, making this an efficient method for generating single grain data.

**Costs and Expenses**

Costs will depend on the project. The current rate for the lab is $1000 per sample for single-grains, which includes all preparation and analysis. The number of grains analyzed depends on the percentage of grains that return a signal, but in general, we run two discs (200 grains) per sample for K-feldspar. Sample preparation by laboratory staff is included in the cost.

**Preparation for visit**

Sample collection can be done independently or in coordination with our research group. If the student wishes to collect samples independently, please contact a laboratory member directly (contact info given below) to discuss sampling protocols. Sample preparation can be done in part by the visiting student and in part by lab staff. (At a minimum, the lab staff will complete the HF preparation step). The student does not necessarily have to prepare the samples himself or herself, as lab staff are available to complete these steps; the amount of preparation completed by the student will vary depending on the details of the proposal.

**Laboratory staff**

The UCLA luminescence lab is directed by Professor Edward Rhodes. Please note that Prof. Rhodes is currently on leave at Sheffield University and will not be present in the lab for the remainder of 2015. Prof. Rhodes is able to provide comments and assistance with analysis over email, telephone and skype, but the majority of interaction will be between the visiting student and the graduate students and technical staff in the luminescence research group.

Nathan Brown (nathan.david.brown@ucla.edu) is a third year PhD student who runs the lab on a day-to-day basis. His primary focus is the development of feldspar as a luminescence thermochronometer. Mike Lawson (mlawson@igpp.ucla.edu) is a fourth year PhD student whose primary focus is active tectonics of the Eureka valley. Chris McGuire (cpmcguire@ucla.edu) is a second year PhD student whose primary focus is the statistics of single-grain data sets and active tectonics in New Zealand. We also have a lab staff of trained undergraduates who specialize in sample preparation.

**Data Analysis**

The visiting student will work with one or more graduate students in the research group (with oversight from Prof. Rhodes) to implement the proposed luminescence study. Depending on the project, the involvement of the student in analysis of luminescence data will vary. In general, analysis of straightforward age estimates using established luminescence protocols can be done quickly by the research group and summarized for the visiting student. More theoretical projects will require closer collaboration between the visiting student, UCLA students and Prof. Rhodes. A lab computer with Riso software Sequence Editor and Analyst will be available for use. These programs can also be downloaded to a personal computer:

<http://www.nutech.dtu.dk/english/Products-and-Services/Dosimetry/Radiation-Measurement-Instruments/TL_OSL_reader/Software>

In addition, our lab has written several MATLAB scripts to analyze data in a programming environment. The visiting student will be trained in the use of these scripts for analysis.

**Waiting time**

Visiting students should expect to plan their laboratory visit between 3 to 6 months in advance in order to make sure that there is machine time available. Once the visit is scheduled, the student will have immediate access to the machine and analysis software.

**Contact Information**

Professor Edward J. Rhodes: <erhodes@epss.ucla.edu> | < ed.rhodes@sheffield.ac.uk>

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