

We are working with the “Working-Group for Geochronology by LA-ICPMS” (<http://www.plasmage.org/>) on several initiatives regarding mineral standards for U-Th-Pb geochronology.

## **Distribution of Zircon Standards**

Our first project is to assemble and distribute sets of ten different zircon samples that are typically used as secondary standards. The samples include:

- Fish Canyon tuff (~28 Ma)
- 94-35 (~55 Ma)
- Plesovice (~337 Ma)
- Temora 2 (~417 Ma)
- R33 (~419 Ma)
- 91500 (~1065 Ma)
- FC1 (~1099 Ma)
- Oracle (~1436 Ma)
- Tan-BrA (~2514 Ma)
- OG1 (~3465 Ma)

We have prepared 100 packets of each standard, with 100 grains in each packet, and have distributed packets to ~50 Working-Group labs. This first distribution was a pilot study to make sure that the grains are adequate in size and number, and we are now distributing packets to other labs on request (at no charge).

We suggest that conducting ~10 analyses of each secondary standard, using whatever primary standard, acquisition routine, and data reduction system are used for typical igneous analyses. The weighted mean age should be calculated for each sample (no rejection), with uncertainties at 2-sigma and including all systematic uncertainties.

Following are the suggested templates for the Data and Methods tables (adapted from Horstwood et al. (2016):

Analytical Data Table:

<https://drive.google.com/file/d/0B9ezu34P5h8ebTduMI91Q0pNZFE/view?usp=sharing>

Analytical Methods Table:

<https://drive.google.com/a/laserchron.org/file/d/0B9ezu34P5h8eR0FUcGIhaGIfb3c/view?usp=sharing>

Following is a link to a table that contains information about each of the ten standards, as well as a few others.

### [Zircon Standards Info Table](#)

Following is a link to an offset plot with several sets of analyses from the University of Arizona Thermo Element2 LA-ICPMS lab. This is offered as an example of how data might eventually be presented.

### [University of Arizona Zircon Offset Plot](#)

## **Compilation of Information About Available Standards**

A second project is to compile equivalent information about other minerals besides zircon, including titanite, monazite, apatite, baddeleyite, and rutile. Following are preliminary compilations for each mineral as well as offset plots showing analyses from the Arizona LaserChron Center.

### [Zircon Info Table](#)

### [Zircon Offset Plot](#)

### [Titanite Info Table](#)

### [Titanite Offset Plot](#)

### [Monazite Info Table](#)

### [Monazite Offset Plot](#)

### [Apatite Info Table](#)

### [Apatite Offset Plot](#)

### [Baddeleyite Info Table](#)

### [Baddeleyite Offset Plot](#)

For more information, or if you would like us to add information about other samples, please contact George Gehrels ([ggehrels@gmail.com](mailto:ggehrels@gmail.com)).

A third project, initiated during 2017, is to collect, process, and distribute a new batch of FC-1 that can be used as a primary zircon standard. In our lab, FC-1 yields the most reliable calibration information for both 206/238 and 206/207.

Because little of the original material was available, we worked closely with John Goodge (Univ. Minnesota) to determine exactly where the original batch of FC-1 (reported by Paces and Miller, 1993) was collected. About 2000 lbs of fresh rock was collected by drilling and blasting from the glacially polished outcrop. The large blocks have been broken up into fist-size pieces, and stored in 5 gallon plastic buckets. To cover our expenses in collecting the material, we are charging \$600 USD per bucket. Please contact George Gehrels ([ggehrels@gmail.com](mailto:ggehrels@gmail.com)) if you would like a bucket!