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NASA Astrobiology Early Career Collaboration Award
Fall 2022

I traveled to the University of Washington to work in Dr. Roger Buick's IsoLab facility in June 2023. The goal of this trip was to learn the techniques used to measure stable isotopes from a variety of biological samples. In the lab, I was trained by graduate student Kunmanee Bubphamanee on the fundamentals of analyzing isotopes from solid and gas samples. The first task was to run international and in-house standards to generate a standard curve that would be appropriate for the anticipated range of isotope values of the samples. Each standard was weighed in tin capsules that were then folded into spheres (Figure 1). This same preparation process was repeated for every standard and sample run. Once all the standards or samples were prepared, I learned how to set up the elemental analyzer isotope ratio mass spectrometer (EA-IRMS; Finnigan MAT253) for analysis. With Kunmanee's assistance, we replaced the old quartz insert column with a new column. Samples were then loaded into the autosampler (Figure 2), which was then purged to remove any residual lab air from the autosampler. I also analyzed gas samples using a Thermo Electron MAT253 IRMS. For both IRMS instruments I used, Kunmanee trained me on how to modify the instrument set-up to analyze different isotopes, such as C, O, and N. I also had assistance from IsoLab manager Andrew Schauer on instrument set-up and data analysis. I was able to analyze a large suite of samples I prepared for the trip. The results of this work will be a fundamental component of an ongoing collaborative project I am working on within the MUSE Interdisciplinary Consortium for Astrobiology Research.

During my trip, I was also able to interact with the UW Astrobiology Program and attend several events held by the program. I am very grateful for the opportunity to build connections with other graduate students in my field, learn a variety of lab techniques that are crucial to my research, and work directly with MUSE collaborators.

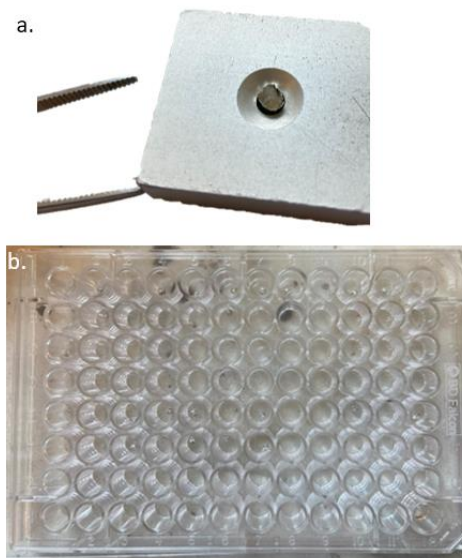


Figure 1. (a) Standards and samples are weighed out in tin capsules and rolled into a sphere using two forceps. (b) The rolled capsules are then placed in a 96-well plate before loading.

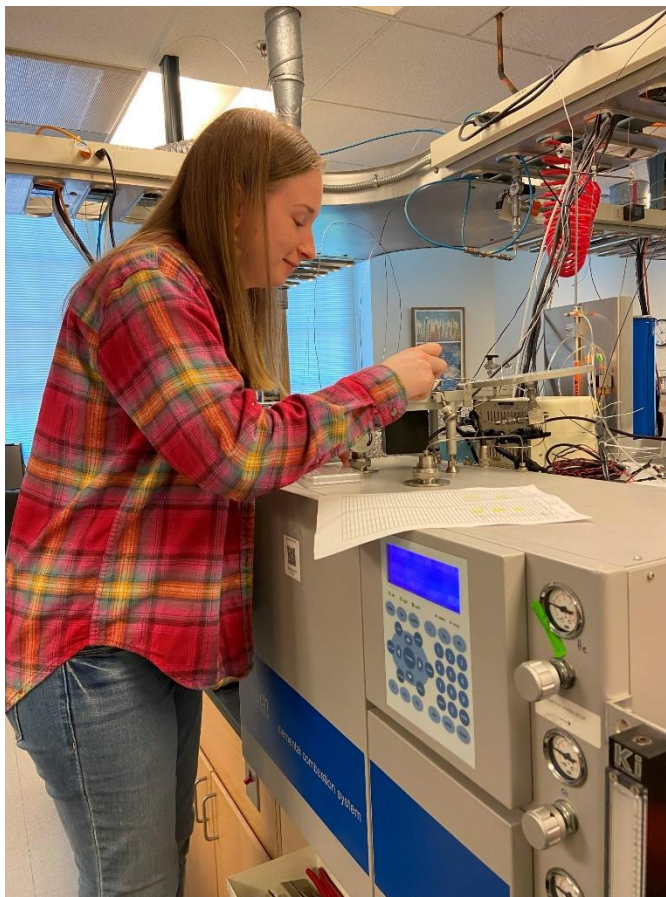


Figure 2. Samples being loaded into the autosampler of the EA-IRMS.