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# Hands on geochemistry as a means to promote equality, diversity, and inclusion in geoscience

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Geochemistry has become central to geoscience research; yet, many students have no access to geochemical laboratories because such labs are expensive to build, maintain, and run. Sophisticated geochemical and isotopic techniques require specialized training and technical support. As a result, most of these lab tend to exist only at well-funded, large, graduate-focused institutions. All of these factors cause isotope techniques to be available to only a small subset of the student and faculty population – often white, well off and male.

Since 2018, our cosmogenic nuclide clean laboratory at the University of Vermont has been supported by the US National Science Foundation as a community facility for cosmogenic nuclide sample preparation; our primary goal is to increase access to such specialized techniques isotopic techniques. During our first year under NSF funding, we hosted 36 individual users and several group tours. Visitors came for weeks to months at a time to process their own samples and learn laboratory methods. Our visitors included 12 faculty members, 3 professionals, 13 graduate students, and 8 undergraduate students; they represented 27 different institutions across 16 American states and 4 other countries. We have sought to optimize safety and laboratory training procedures, enabling us to host visitors regardless of their previous experience working in a laboratory setting. We work with visitors collaboratively and are involved in their projects from inception to publication, thereby including researchers who have had no experience with isotopes, laboratory science, or geochronology. The diversity of our visitors far exceeds that of US Geoscience as a whole and includes many woman and demographics currently under-represented in Geoscience faculty ranks.

However, challenges to facilitating a diverse community still exist. Although all training and mentoring costs are covered by the US NSF, visitors to the Community Cosmogenic Facility pay a per-sample fee to cover consumables, pay for AMS analyses, and cover their own travel, all of which restrict access. Certain interested users come from countries for which obtaining a US visa is challenging or impossible; similarly, users may not be able to travel to Vermont for financial or personal reasons. We are exploring additional possibilities for awarding our own internal grants in order to be more inclusive, and also seek to develop robust online content so that collaborators can learn from afar. Increasing diversity, inclusivity, and access in isotopic techniques is a work in progress, which we will continue address in the coming years.