



New Mexico Bureau of Geology & Mineral Resources

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New Mexico Geochronology Research Laboratory Endowment Campaign Case for Support

The New Mexico Geochronology Research Laboratory (NMGRL) has established two endowments to help insure long-term sustainability and student involvement in the laboratory. One endowment is dedicated to providing student funding (NMGRL Student Endowment), including supporting research assistantships and paying analytical costs for students. The second endowment supports laboratory excellence (NMGRL Technical Excellence Endowment), including technician support and funding new cutting-edge equipment purchases and research and development initiatives. We are seeking contributions to the two endowments from past NMT students, long-term lab users, industry, and others seeking to support excellence in geochronology at NMT.

One of the most impactful resources within the Bureau is the New Mexico Geochronology Research Laboratory. Established in 1993, the NMGRL is a state-of-the-art, student-research focused $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology facility that specializes in high-precision dating of potassium bearing rocks and minerals. Only a handful of the worldwide Argon Geochronology labs share the technical capacity of the NMGRL and it is the only such lab hosted by a state geological survey.

Cutting edge research at the NMGRL has focused on climate change, volcanism, plate tectonics, petroleum and mining exploration, river incision history, thermal and uplift records, and timing of cave formation, all while maintaining the core missions of advancing New Mexico geochronology and supporting Bureau mapping efforts. The NMGRL has involved students throughout its research efforts. Over 50 New Mexico Tech masters and PhD students and numerous undergraduate students have done research or worked at the NMGRL. These students have gone on to successful, fulfilling, and impactful careers due in part related to their experience gained working in the Lab. In addition, the NMGRL has worked with >300 students from dozens of other universities, providing access to high quality data and hands-on laboratory experience.

Innovations in technology, hardware, and software developed at the NMGRL have advanced the science of Argon Geochronology. The NMGRL is recognized for its development of noble gas software PyChron by former NMT PhD student and current Bureau staff member Dr. Jake Ross. The NMGRL was the first to implement CO_2 laser extraction of argon that is now an industry standard, among many other achievements. The high throughput capacity of the NMGRL has allowed the lab to concentrate on internal research while also providing access to high-quality geochronology data to researchers and industry from around the world.

Currently, about one-half of the NMGRL's revenue comes from collaborative and private sources, with the remainder coming through state and federal sources via successful research grants. With an annual budget of ~\$375,000, the Lab requires substantial financial resources to operate at the highest level of productivity and ingenuity. This budget does not include the ongoing cost of updating equipment and advancing technology that is necessary to stay at the forefront of geochronology research, but does reflect substantial salary support provided from the Bureau for the laboratory Geochronologists.

The NMGRL has established two endowments to help ensure financial stability, support student research, employ essential technical staff, and continue to lead in technical advancements. Successful growth of the endowments will ensure continued accessibility to high-quality geochronology to multiple users around the world. Maintaining accessibility to our facility is a key philosophy of the NMGRL especially in light of the great demand for geochronology data. Sustainable funding sources will help the Lab to manage a vibrant student focus supported by excellent technical staff with access to the most advanced technology. Our initial goal is for the student and technical excellence endowments to reach 1 and 2 million dollars, respectively. We have had a successful "silent" fund-raising campaign and we have also obtained multiple pledges of matching gifts to our endowment and thus we believe our targets are well within reach.

The NMGRL is at the intersection of groundbreaking scientific research and student scholarship. Establishing sustainable funding sources will advance the mission and sustainability of the Lab, leading to new scientific discoveries and development of future scientists. Additional sustainable funding will help the NMGRL to continue to be a long-term and available resource for students and researchers from NMT and elsewhere, as well as for non-academic users.