Sole Source Application and Determination Form

A sole source determination is not effective until the sole source application for determination has been posted on the Purchasing website for thirty (30) calendar days without protest and is subsequently approved in writing by the Vice President of Administration and Finance.

1. Name of Department: Bureau of Geology
   Contact Name: Julia Ricci
   Phone: 575-835-5217
   Email: Julia.ricci@nmt.edu

2. Name of Prospective Vendor: Lehigh University
   Contact Name: Jamerson Baynard
   Phone: 610-58-3661
   Email: jabb24@lehigh.edu
   Estimated Cost: $50,000
   Duration (for Services or Professional Services – limited to four years): na

3. Purpose/need for purchase and detailed list of items of tangible property, services, or professional services:

State-of-the-art 40Ar/39Ar geochronology research, including advanced analytical capabilities and continued method development

- Argus VI Mass spectrometer
- Automated gas handling system
- Laser heating system

4. Detailed explanation of criteria developed for this purchase:

This mass spectrometer and associated ultra-high-vacuum extraction line meet the technical requirements for high-precision 40Ar/39Ar geochronology and ongoing analytical method development. Because the system is a direct twin of the laboratory's existing instrumentation, it is fully compatible with current noble gas extraction and mass spectrometry infrastructure, including vacuum interfaces, electronics, control software, and data acquisition workflows. The system meets stringent performance

requirements for sensitivity, long-term stability, and reproducibility necessary for advanced, research-grade geochronologic analyses. Acquisition of this specific equipment ensures analytical continuity and avoids the significant technical risk, downtime, and re-qualification that would result from introducing a non-equivalent alternative system.

5. Provide a detailed, sufficient explanation of the reasons, qualifications or unique capabilities of the prospective vendor that make that prospective vendor the one source for providing the items of tangible property, services, or professional services:

ThermoFisher Scientific, the manufacturer and supplier of this specific model of mass spectrometer, ceased production of the instrument in January 2026. This model is uniquely compatible with the laboratory's existing 40Ar/39Ar geochronology infrastructure. As a result, acquisition of this system from this vendor represents the only viable option to maintain analytical continuity, support ongoing method development, and avoid substantial re-engineering, re-validation, and disruption of active research programs.

6. Provide a detailed, sufficient explanation of how the items of tangible property, services, or professional services is/are unique and how this uniqueness is substantially related to the intended purpose of the department/grant:

This mass spectrometer is being acquired primarily as a source of critical replacement parts and assemblies for the laboratory's existing 40Ar/39Ar analytical system. Because it is a direct twin of the current instrument, its components, subsystems, and interfaces are fully interchangeable with existing extraction hardware, vacuum systems, electronics, and control software. This interchangeability is essential to maintaining uninterrupted analytical capability and supporting ongoing research and grant-funded activities.

The uniqueness of this equipment is therefore directly related to its role in ensuring continuity of operations, minimizing instrument downtime, and preserving analytical consistency. Comparable systems from other manufacturers are not directly compatible and cannot provide equivalent parts support without extensive re-engineering, re-validation, and operational risk, which would jeopardize active research programs and grant deliverables.

7. Please provide a narrative description department's due diligence in determining a basis for the procurement. Include:
    a. method used to research and review other available sources (i.e. list of potential vendors from Purchasing, internet, state pricing agreements, purchasing cooperatives)
    b. list of vendors contacted, the date and method of contact (i.e. email, phone call)
    c. documentation explaining why:
        i. those vendors cannot provide the required items of tangible property, services, or professional services
        ii. other similar items of tangible property, services, or professional services cannot meet the intended purpose of department/grant:

A noble gas mass spectrometer is a highly specialized analytical system, with only a limited number of manufacturers worldwide. Of these, only one mass spectrometer model meets the technical and operational requirements for the type of 40Ar/39Ar research conducted at the New Mexico Geochronology Research Laboratory, Bureau of Geology. Following Thermo Fisher Scientific's cessation of noble gas mass spectrometer production in January 2026, access to multi-collector systems compatible with the laboratory's existing infrastructure is now extremely limited. Acquisition of a directly compatible system is therefore only possible through existing or secondary-market availability.

Due diligence discussions were conducted with Thermo Fisher Scientific via email and in person at the American Geophysical Union (AGU) Fall Meeting in December 2025, during which the end of production of this instrument line was confirmed. Additional discussions were conducted with other manufacturers of noble gas mass spectrometers, including Isotopx, during AGU (December 2025). While these systems were reviewed, they are not directly compatible with the laboratory's existing extraction line, vacuum architecture, electronics, or control software. In addition, acquisition of an alternative system would involve substantially higher cost and require significant re-engineering and re-validation, rendering such alternatives unsuitable for meeting the intended purpose of this procurement.

Based on this due diligence, no alternative vendor or system can provide directly compatible equipment capable of meeting the technical, operational, and continuity requirements of the department's 40Ar/39Ar research program, supporting this procurement as a sole-source acquisition.

I certify I have performed thorough and diligent research and analysis to determine that Lehigh University is the only source capable of providing the required instrumentation. I understand that violations of the New Mexico Procurement Code (Chapter 13, Article 1 NMSA 1978) can carry severe penalties. I affirm that the information provided in this Sole Source Determination is true and accurate to the best of my knowledge and belief.

Name, Title:
Dr. Julia Ricci, Geochronologist

AdobeSign/Date
January 21st, 2026

JRicci

Review: Purchasing Services: Lisa Majkowski, Director

Lisa Majkowski
01.21.2026

Website Posting Date:

Posting Expiration Date:

Protested (Yes/No):

Approval: Delilah A. Walsh
Vice President of Administration and Finance

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