

SINGLE SOURCE CERTIFICATION

Authority is requested to make the following purchase under the provision of USF System Regulation USF4.02010(IV)(A)(2)(b) as a non-competitive purchase available from only one source. By submitting this form, department acknowledges that existing [exemptions](#) will not apply to this purchase. Single source requests exceeding \$150,000 must be signed by a Procurement Director and posted publicly for (3) business days.

DATE: August 15, 2024

ITEM(S): Bruker LUMOS II compact standalone FT-IR imaging microscope and microplastics library

PRICE: \$ 248,034.51 FUND #: TPA 20000 250000 000000 0000000 8880026500

SUPPLIER ID: 0000073400 REQUISITION#: _____

SUPPLIER NAME: Bruker Scientific

FEDERAL GRANT: Y N

In your words, describe the equipment, commodity, or contractual service. Explain how these specifications are essential to the accomplishment of your work:

FTIR imaging microscopes enable rapid, non-destructive, chemical analyses of a wide variety of minerals, glasses and materials, with resolution down to one-quarter the width of a human hair. FTIR stands for Fourier Transform Infrared the microscopes work their magic by exploiting the vibrational absorptions of chemical compounds in the infrared region of the electromagnetic spectrum. I have received funding from NSF to purchase the LUMOS-II imaging microscope from Bruker Scientific. This robust, state-of-the-art instrument won the GOLD Award for the best new scientific instrument at Pittcon 2020, an annual conference showcasing advances in analytical research and scientific instrumentation. The new instrumentation will enable a wide range of applications, including 1) distribution of volatiles in mantle sources and their fluxes in mid-ocean ridge, ocean island, and subduction environments, 2) origin and evolution of volatiles in tephra and melt inclusions with emphasis on eruption dynamics, and 3) studies of environmental microplastics in Tampa Bay and beyond, contributing to a comprehensive study of pollutants in the region s water, sediments, and biota.

In your own words, describe the reason(s) the item is not subject to competition from other sources and how the stated specification(s) restrict the requisition to only one supplier. Description may include unique features/compatibility/specifications/availability/delivery time frame etc. (Note: Price is not a valid reason).

The Bruker LUMOS II imaging FTIR offers unique capabilities not available in any other instrument currently on the market justifying a sole-source acquisition. First, the Bruker system provides high spatial resolution, allowing detection of particles on the order of 5 µm diameter, a feature not available in other imaging IR systems on the market. Second, the Bruker system provides a high data acquisition rate, maximizing the ratio of spectra/time. A reasonable minimum requirement is to measure at least 500 spectra/sec at a spectral resolution of 4 cm-1. This capability is exclusive to the Bruker system. Third, the Bruker system allows fully automated analysis using the three measurement modes, transmission, attenuated total reflection, and reflection. Again, no other instrument on the market offers this capability.

For our microplastics work, Bruker provides patented libraries and data analysis software that perform a fully automated analysis of the hyperspectral image, providing the number of particles, their individual chemical identity, and their individual dimensions, as well as a statistical overview. The data analysis is optimized for the identification of microplastic particles ranging from few to >100 micrometers and is essential for our research.

In your own words, describe the due diligence conducted to validate this supplier as Single Source. Description SHOULD list all other suppliers with item(s)/service(s) with similar functions, your efforts to identify other suppliers, and why these suppliers would not qualify to submit a competitive quote.

Three other manufacturers (Shimadzu, Perkin Elmer, and Thermo) offer similar instruments, but Bruker is the only manufacturer that meets the following specifications exclusively:

1. Stand-alone FTIR spectrometer with integrated FTIR microscope
2. Fully motorized system
3. Only stand-alone imaging FTIR microscope on the market with a 32x32 Focal Plane Array (FPA)
4. Fully automated and motorized ATR mapping using Imaging Detector
5. Inert to water vapor making it immune to variations in humidity (This one is essential for Florida)
6. Offers detectors for high sensitivity measurements
7. Able to define multiple mapping area on a single measurement
8. Working distance of Objective is >25 mm
9. Microscope provides lower numerical aperture for visible inspection
10. Cube corner mirrors permanent alignment
11. Equipped with fully automated instrument performance test (OQ PQ)
12. Dedicated patented libraries
13. Automated water vapor compensation
14. Advanced ATR correction function in software

DocuSigned by: Clifton James 9/5/2024 | 09:35 EDT START 09/06/2024 END 09/10/2024
Approved By (Procurement) DATE **PUBLIC POSTING DATES**
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