Opportunity Title: Sample Processing & Extraction Protocol Development for Electrophoretic Chemical Analysis
Opportunity Reference Code: 0192-NPP-NOV23-JPL-Astrobio

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0192-NPP-NOV23-JPL-Astrobio

Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description This is a research opportunity in microscale chemical analysis in the Microdevices Laboratory at JPL. This research will involve the development and validation of sample processing protocols for astrobiology analog samples to prepare them for biosignature analysis of organic compounds present using capillary electrophoresis coupled to a variety of different detectors. The ultimate goal of this effort is to lay the operational foundation for a life detection mission to an ocean world such as Europa or Enceladus seeking chemical signatures of life. A key aspect of this endeavor is the efficient concentration and extraction of measurable organic compounds from complex sample matrices such as ices, waters, minerals, or mixtures thereof. In the case that organics are present in the form of extant cells, efficient cell lysis and digestion into species amenable to electrophoretic analysis is required. Potential methods to be used for this effort could include subcritical water extraction, sonication, mixing, filtration, chemical treatment, lyophilization, solvent extraction, biological digestion, or other means.

Applicants should have a recent Ph.D. in chemistry or a chemistry-related discipline with a strong background in analytical chemistry, capillary electrophoresis, electrospray ionization, and mass spectrometry. Experience analyzing complex real-world environmental samples is also a significant asset.

Location:
Jet Propulsion Laboratory
Pasadena, California

Field of Science: Astrobiology

Advisors:
Peter Willis
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Applications with citizens from Designated Countries will not be accepted at this time, unless they are Legal Permanent Residents of the United States. A complete list of Designated Countries can be found at: https://www.nasa.gov/oiir/export-control.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);
- Foreign Nationals eligible for an Exchange Visitor J-1 visa status; and,

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- Applicants for LPR, asylees, or refugees in the U.S. at the time of application with 1) a valid EAD card and 2) I-485 or I-589 forms in pending status

Eligibility Requirements

- **Degree:** Doctoral Degree.