

**Opportunity Title:** Laboratory Studies of Astrophysical Ices and Organic Compounds

**Opportunity Reference Code:** 0065-NPP-NOV23-ARC-Cosmochem

**Organization** National Aeronautics and Space Administration (NASA)

**Reference Code** 0065-NPP-NOV23-ARC-Cosmochem

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

**Description** Our group studies the composition, evolution, as well as the physical and chemical properties of interstellar and planetary materials. More particularly, we focus on the evolution of astrophysical ices (on interstellar grains in dense molecular clouds, on grains in protoplanetary disks, in comets, or on the surface of icy worlds in our Solar System) and their interaction with energetic radiation (photons and energetic particles). We are particularly interested in how this leads to the formation of organic residues which contain a large variety of organic molecules including compounds of astrobiological interest. Such astrophysical ice analogs are produced in the laboratory under conditions that are realistically close to those expected in the interstellar and/or interplanetary medium (low temperatures, high vacuum), and analyzed using a range of analytical techniques which include infrared (IR) spectroscopy and microscopy, gas chromatography coupled to mass spectrometry (GC-MS), fluorescence microscopy, and X-ray absorption near-edge structure (XANES) spectroscopy. We also study the chemical and isotopic properties of the organic residues produced in our experiments, as well as the effects of energetic radiation on the composition and structure of these residues. The study of these materials provides us with qualitative and quantitative information to: (1) interpret astronomical observations; (2) interpret data taken from extraterrestrial samples (cosmic dust, meteorites, samples returned by spacecraft missions); (3) interpret data obtained by missions going to other Solar System objects; (4) help improve existing astrophysical and astrochemical models which need experimental inputs; and (5) guide instrument development for future missions. For more information on the Astrophysics & Astrochemistry Laboratory, visit our Web site at <http://www.astrochem.org>.

**Location:**

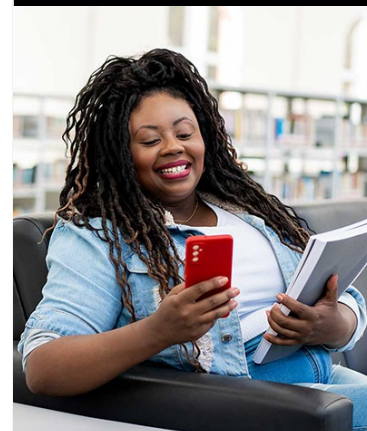
Ames Research Center  
Moffet Field, California

**Field of Science:** Cosmochemistry

**Advisors:**

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650-604-6849

**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/oiiir/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,
- 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.