

Opportunity Title: Laboratory Studies of Interstellar, Planetary, and Lunar Ices

Opportunity Reference Code: 0343-NPP-NOV26-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

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How to Apply All applications must be submitted in [Zintellect](#)

Please visit the NASA Postdoctoral Program website for application instructions and requirements: [How to Apply | NASA Postdoctoral Program \(orau.org\)](#).

A complete application to the NASA Postdoctoral Program includes:

1. Research proposal
2. Three letters of recommendation
3. Official doctoral transcript documents

Application Deadline 11/1/2026 6:00:59 PM Eastern Time Zone

Description About the [NASA Postdoctoral Program](#)

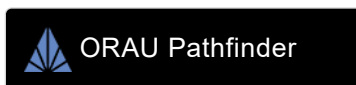
The [NASA Postdoctoral Program \(NPP\)](#) offers unique research opportunities to highly-talented scientists to engage in ongoing NASA research projects at a NASA Center, NASA Headquarters, or at a NASA-affiliated research institute. These one- to three-year fellowships are competitive and are designed to advance NASA's missions in space science, Earth science, aeronautics, space operations, exploration systems, and astrobiology.

Description:

Icy surfaces and cold volatile environments are ubiquitous across astronomical and planetary landscapes. Dense star-forming regions, protoplanetary disks, and cold molecular clouds serve as fundamental chemical factories where solid-state reactions yield the precursors to planetary systems. Within our own Solar System, these ices are preserved as unique records of volatile delivery trapped within permanently shadowed regions (PSRs) of the Moon, and act as key drivers of chemical complexity on Ocean Worlds and small bodies. To interpret remote-sensing observations from current telescopes and spacecraft (such as JWST, ALMA, Europa Clipper) and to optimize the science returns of upcoming planetary exploration missions, a comprehensive molecular-level understanding of ice chemistry, spectroscopy, and processing is required.

Our research group utilizes ultra-high vacuum and cryogenic laboratory systems equipped with various radiation sources to simulate these extreme conditions, investigating gas-grain interactions, physical chemistry on icy surfaces, radiolytic/photolytic processing, and solid-to-gas phase transitions.

We welcome NPP applicant projects addressing a wide range of ice environments, including but not limited to:



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- **Dense Star-Forming Regions:** Investigating the formation, structural evolution, and chemistry of complex organic molecules relevant to interstellar ice mantles and cold molecular clouds.
- **Protostars & Protoplanetary Disks:** Studying desorption kinetics, volatile entrapment, and sublimation dynamics to constrain chemical transport and pathways during the phases of star and planet formation.
- **Lunar Volatiles & Exploration:** Characterizing the physical properties and spectral signatures of lunar ice analogs to trace the origin and evolution of volatiles on the Moon. This work also provides vital support for upcoming cryogenic sample return missions and the development of In Situ Resource Utilization (ISRU) strategies.
- **Planetary Worlds & Small Bodies:** Exploring the spectroscopic signatures, thermal behavior, and surface processing of ice analogs representing comets, Kuiper Belt Objects, and Ocean Worlds (such as Europa and Enceladus).
- **Astrobiology & Weathering:** Simulating the impacts of space weathering, UV radiation, and ion bombardment on the survival of organic biosignatures or microorganisms under planetary surface conditions.

Field of Science: Planetary Science

Advisors:

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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/oir/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

Questions about this opportunity? Please email npp@orau.org

Qualifications Candidates with backgrounds in physical chemistry, experimental planetary science,

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astrochemistry, astrobiology, or surface science—as well as observers or modelers looking to integrate a primary laboratory aspect into their research—are encouraged to apply.

Point of Contact [Mikeala](#)

Eligibility Requirements • **Degree:** Doctoral Degree.