Opportunity Title: Experimental Studies of the Chemical Composition and Geological Processes of Icy Worlds
Opportunity Reference Code: 0270-NPP-JUL24-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0270-NPP-JUL24-JPL-PlanetSci

How to Apply All applications must be submitted in Zintellect

Application Deadline 7/1/2024 6:00:59 PM Eastern Time Zone

Description **Description:**

Icy worlds are intriguing targets in the search for evidence of life beyond our own planet, as reflected in recent planetary science decadal surveys consistently placing a priority on missions to these bodies. A robust understanding of how icy materials behave under planetary conditions is essential for informing models and planning observations to optimize the science return of missions. The focus of our research group is on putative materials that are of relevance to ocean worlds (e.g. clathrate hydrates, organic co-crystals, and frozen brines), whose many fundamental properties remain largely unconstrained to date. Selected NPP fellows will help conduct research regarding the crystal structures, phase transition/behavior, heat capacity, thermal stability and reaction of these materials using a complementary suite of in-house analytical techniques, including spectroscopies (infrared, Raman, UV), powder X-ray diffraction, optical microscopy, and differential scanning calorimetry. These projects are directly relevant to NASA's Science Strategy Plan as they support the agency's exploration initiatives and focus on scientific discovery.

Interested candidates with significant laboratory experience and familiarity with the experimental techniques are encouraged to apply, especially those with expertise in crystallography and structure solution.

References:

Vu, T. H. et al. "Spatial Distribution of Glycine and Aspartic Acid in Frozen Enceladus Brines." Planet. Sci. J. 2023, 4, 156

Johnson, P. V & Vu, T. H. "Formation of Vitreous Salt Hydrates Under Conditions Relevant to Europa." Planet. Sci. J. 2022, 3, 151

Cable, M. L. et al. "Titan in a Test Tube: Organic Co-crystals and Implication for Titan Mineralogy." Acc. Chem. Res. 2021, 54, 3050

Vu, T. H. et al. "Rapid Formation of Clathrate Hydrate from Liquid Ethane and Water Ice on Titan." Geophys. Res. Lett. 2020, 47, e2019GL086265

Field of Science:

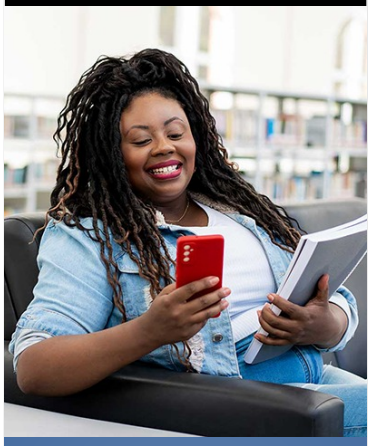
- Planetary Science

Advisors:

Tuan Vu
tuan.h.vu@jpl.nasa.gov
(818) 354-1000

NPP NASA Postdoctoral Program

ORAU Pathfinder



Whether you are just starting your career or already at a senior level, ORAU offers internships, fellowships, research opportunities, and contract positions that can provide you with invaluable experience. Download the ORAU Pathfinder mobile app and find the right opportunity to propel you along your career path!

Visit ORAU Pathfinder

GET IT ON Google Play

Download on the App Store

Opportunity Title: Experimental Studies of the Chemical Composition and Geological Processes of Icy Worlds
Opportunity Reference Code: 0270-NPP-JUL24-JPL-PlanetSci

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,
- 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.