Opportunity Title: Spectroscopic Lidars for Planetary and Earth Science Remote Sensing
Opportunity Reference Code: 0118-NPP-MAR26-GSFC-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0118-NPP-MAR26-GSFC-PlanetSci

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 4/2/2026 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:

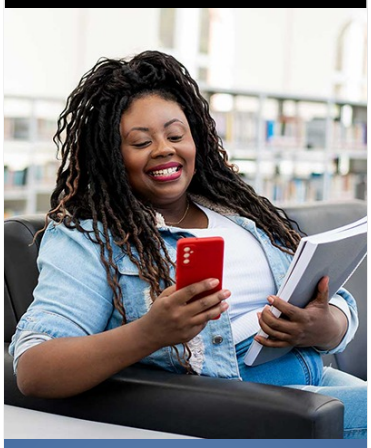
We seek researchers who enjoy working at the union of science and technology who would like to help bridge the gap between idea and reality. This project offers the opportunity to work where engineering and science meet to develop and test next-generation laser-based sensors and instruments for future planetary science applications. You will take part in the development of prototype instrumentation and spaceflight hardware, and work with the team to develop potential mission concepts. As part of this opportunity you will learn how NASA chooses, builds, and flies the instruments that make all of NASA science possible.

We encourage proposals that advance the state of active spectroscopy for both planetary and Earth science applications. With the use of multiple lasers at a few pivotal wavelengths, a lidar (light detection and ranging) can be used as a spectrometer to map the volatiles on planetary surfaces or trace gases in the atmosphere under uniform lighting conditions, during both day and night, and including polar regions and permanently shadowed areas. These capabilities are relevant to current NASA science, technology, and exploration goals.

These instruments will measure from orbiters, landers, rovers, or via Artemis astronauts to quantify surface volatiles on the Moon or other airless bodies as well as biogenic and chemically relevant trace gases (CH4, H2O, CO2, etc.) in the atmospheres of Earth and Mars. For the Moon, an orbital spectroscopic lidar would enable creation of a comprehensive map of water ice at the poles to direct human and robotic exploration via the Artemis program as well as commercial and governmental *in situ* resources utilization. Recent breakthrough developments in solid state laser technology and single photon photodetectors have made it possible to remotely sense multiple

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

species from the visible to mid infrared wavelengths.

You will be an integrated part of our lidar team, which has successfully developed airborne trace gas lidars for CO2 and CH4 at short infrared wavelengths. We are looking for enthusiastic researchers to expand the instrument capabilities to operate in the mid wave infrared region to measure other species, such as water ice on the Moon and CO on Earth. Our technology is applicable not just to the Moon and Mars but to other planetary bodies, such as Saturnian or Jovian moons (e.g. Titan) and Earth.

This opportunity includes hands-on evaluation of state-of-the-art sensors and detectors in the lab, integration of the detectors with the existing proven trace gas lidar system, study of trace gas spectroscopy to select the optimal gas absorption lines, field-testing to a remote target, and analyzing and presenting the measurement results. You will work to test and characterize the laser transmitter and receiver components in our existing prototype instrument for future planetary and Earth missions. Our choice of laser transmitter and detector technologies will leverage cutting-edge work by the commercial and defense sectors. In particular, we plan to use the newly available HgCdTe avalanche photodiode with our instrument to extend the wavelength range to 4400 nm at near quantum limited receiver sensitivity. When integrated into a remote sensing instrument, these detectors will expand lidar capabilities to wavelengths and sensitivities that were not previously viable.

We encourage applicants to apply who enjoy hands on-work in the laboratory to build new and exciting technologies. During your fellowship you will have the opportunity to learn the entire process of instrument development for spaceflight, from concept, to prototype, to flight build and qualification, to operation in space.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

Field of Science: Planetary Science

Advisors:
Xiaoli Sun
xiaoli.sun-1@nasa.gov
301-614-6732

Daniel Cremons
daniel.cremons@nasa.gov
301-614-6722

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

Opportunity Title: Spectroscopic Lidars for Planetary and Earth Science Remote Sensing
Opportunity Reference Code: 0118-NPP-MAR26-GSFC-PlanetSci

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

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

Point of Contact Mikeala

Eligibility Requirements

- **Degree:** Doctoral Degree.