

**Opportunity Title:** Development of Semiconductor Lasers for Absorption Spectroscopy

**Opportunity Reference Code:** 0104-NPP-NOV23-JPL-EarthSci

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

**Reference Code** 0104-NPP-NOV23-JPL-EarthSci

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

**Description** The next generation Tunable Diode Laser (TLD) absorption spectrometers, should be compact, low-power consumption, and low-cost for deployment in many future Earth and planetary missions. Such capability is of particular interest for future mission opportunities for Mars, Venus, Jupiter, Europa, and their moons for the detection of biogenic gases and their isotope ratios. The key enabler for realization of such an instrument is the availability of semiconductor lasers at specific wavelengths coinciding with the absorption band of the gases of interest.

The Advanced Microfabrication and Optoelectronics Group at JPL is accepting applications at the post doctoral level to design, fabricate, and characterize advanced semiconductor lasers for application in spectroscopy and LIDAR. For spectroscopy low power consumption room temperature 4-10 micron quantum cascade lasers are currently being developed. For LIDAR applications extremely stable frequency, narrow line width optically or electrically pumped semiconductor lasers in the 2.0-3.0 um wavelength are needed.

Knowledge and experience in infrared quantum cascade laser design, fabrication, including knowledge and experience in the fabrication of single mode semiconductor lasers are required. The candidate will work within a small team developing laser diodes in the 2.0-3.0 micron range and low power consumption quantum cascade laser in the 4.0- 10.0 micron wavelength.

**Location:**

Jet Propulsion Laboratory  
Pasadena, California

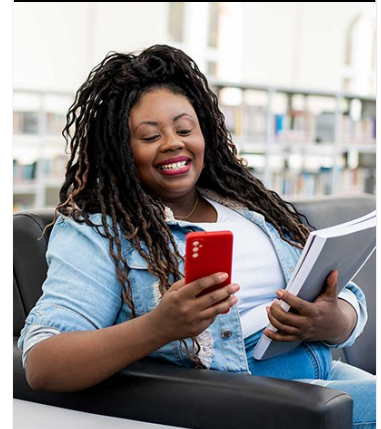
**Field of Science:**Earth Science

**Advisors:**

Siamak Forouhar  
Siamak.Forouhar@jpl.nasa.gov  
(818) 393-5023

Shouleh Nikzad  
shouleh.nikzad@jpl.nasa.gov  
818-354-7496

**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



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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.