

**Opportunity Title:** Sensors and microelectromechanical systems for missions to hot planets

**Opportunity Reference Code:** 0178-NPP-JUL22-JPL-PlanetSci

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

**Reference Code** 0178-NPP-JUL22-JPL-PlanetSci

**Application Deadline** 7/1/2022 6:00:00 PM Eastern Time Zone

**Description** In the last few years we have seen rapid growth of III-V semiconductors geared towards a variety of applications where silicon performance falls short. Gallium nitride (GaN), a III-V semiconductor, is proven to be the material of choice for high- frequency, high-power, and high-temperature applications. GaN also offers a number of excellent mechanical properties, making it a suitable material for MEMS. Particularly, GaN and its related material family are very interesting for harsh environment applications. Beyond earth, GaN based microsystems can enable low-cost and long-lasting planetary exploration missions to hot planets. Our research objective is to develop a sensor technology platform that is temperature and radiation tolerant using gallium nitride MEMS technology. In this specific project the postdoc will help with developing temperature stable sensors and micro-instruments working at 500C using GaN based acoustic and micromechanical components.

**References:**

M. Rais-Zadeh, D. Weinstein, Gallium Nitride for M/NEMS, Book chapter in Piezoelectric MEMS Resonators, pp. 73-98, 2017 M. Rais-Zadeh, et. al, Gallium Nitride as an electromechanical material, J. of Microelectromechanical Microsystems, vol. 23, issue 6, pp. 1252-1271, 2014

**Location:**

Jet Propulsion Laboratory  
Pasadena, California

**Field of Science:** Planetary Science

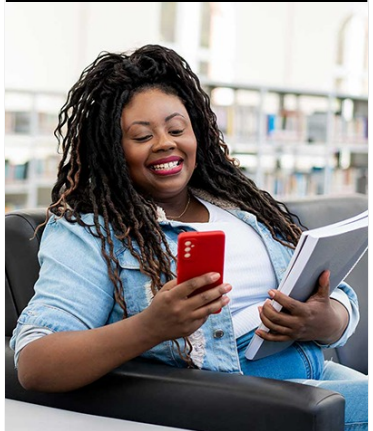
**Advisors:**

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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/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,



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- 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.