

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

**Opportunity Reference Code:** 0178-NPP-NOV24-JPL-PlanetSci

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

**Reference Code** 0178-NPP-NOV24-JPL-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** 11/1/2024 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 U.S. and non-U.S. 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:**


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



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**Location:**

Jet Propulsion Laboratory  
Pasadena, California

**Field of Science:** Planetary Science

**Advisors:**

Mina Rais-Zadeh  
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626-460-9989

**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/oiiir/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@oraui.org](mailto:npp@oraui.org)

**Eligibility Requirements**

- **Degree:** Doctoral Degree.