

Opportunity Title: Venus Geophysical/Geochemical Research

Opportunity Reference Code: 0017-NPP-NOV23-GRC-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0017-NPP-NOV23-GRC-PlanetSci

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

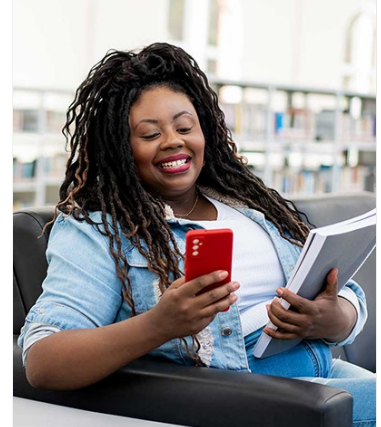
Description Venus exploration has gained considerable interest and relevance in recent years. It has been called a virtual "twin" of Earth and has significant similarities in terms of size, initial composition, and solar-radiative influences. However, its planetary conditions contrast drastically from that of Earth. Venus has a dense atmosphere composed predominantly of carbon dioxide with a significant greenhouse effect, and an average surface temperature of ~460 °C. Missions that have landed on the surface of Venus have typically lasted less than two hours due to the high temperatures and harsh conditions. Further, the measurements of in situ conditions from the Venus surface are very limited due to the lack of sensor and instrument systems that can operate in the harsh Venus environment.

Recent technology developments and new mission concepts that incorporate surface elements have kindled the potential for in situ and perhaps long duration presence on the Venus surface. NASA Glenn has been active in identifying and pursuing surface science investigations, developing the necessary technologies and lander systems, and generating small lander/probe concepts.

This postdoctoral fellowship concentrates on in situ Venus geophysical/geochemical investigations and models focusing on the Venus surface and surface/ atmosphere interactions. Opportunities for research can include but not limited to exploring the capabilities of potential harsh environment instrumentation suites to provide relevant science data, Venus weathering of expected surface elements, environmental effects on instruments or probe/lander systems, deep atmospheric chemistry, surface property investigations, and other related topics.. The core of this work is aimed at preparing NASA to have the relevant core scientific understanding and capabilities to conduct extended scientific investigations at the surface of Venus.

The candidate will have access to unique experimental and technical capabilities and instrumentation technology to carry out the studies. In particular, the candidate will have access to the utilization of the Glenn Extreme Environment Rig (GEER). Coupled with this physical capability is access to a range of human talent for high temperature instrumentation, sensors and electronics. This includes ongoing work in high temperature seismometry, pressure, temperature, and composition measurement, and other relevant studies for Venus surface characterization.

The candidate will use these capabilities, coupled with ongoing studies of potential Venus mission scenarios, to conduct scientific investigations into Venus geophysics/deep atmospheric physics and chemistry studies towards preparing for Venus in situ science missions. Research can also entail development and verification of various forms of instrumentation required to implement such future missions in the respective environments. Similar



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science for other planetary bodies may also be considered based on relevance to these research topics and applicant interest.

Requirements are a recent Ph.D. in geophysics, geology, geochemistry, or atmospheric physics. Experience in experiment design or instrument/space craft system development is desirable.

The position is for two years with a possible extension to three years.

The primary point of contact for this opportunity is Dr. Tibor Kremic, whose contact information is included on the list of advisors. Please contact Dr. Kremic for details about this opportunity.

Location:

Glenn Research Center
Cleveland, Ohio

Field of Science: Planetary Science

Advisors:

Tibor Kremic
Tibor.Kremic@nasa.gov
216-433-5003

Gary W. Hunter
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216-433-6459

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.