Opportunity Title: Laser-based Flow Measurements in High Enthalpy Ground Test Facilities
Opportunity Reference Code: 0141-NPP-MAR26-ARC-Engineering

Organization National Aeronautics and Space Administration (NASA)

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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:

The design and post-flight analysis of thermal protection systems for planetary entry vehicles relies heavily on computational modeling. Validation of these models is vital, but flight data is relatively limited. Ground testing offers a method of validating these computational models in flight relevant environments. Flow measurements during ground testing enable model improvement and therefore support future mission design.

The Thermophysics Facilities Branch at NASA Ames Research Center operates NASA's Arc Jet Complex and Electric Arc Shock Tube to study planetary entry (Earth, Mars, Venus, …), and we are continuously working to apply novel laser-based measurement techniques at these ground test facilities. The focus of this project will be femtosecond laser electronic excitation and tagging (FLEET) for the study of flow velocity and two photon absorption laser induced fluorescence (TALIF) for the study of species concentrations. The applicant will participate in implementing and operating the FLEET and TALIF systems at an arc jet and potentially a shock tube. Once operational, the applicant will lead data acquisition, data analysis, and interpretation of results from these systems.

This opportunity includes hands-on implementation and operation of laser diagnostics and therefore requires an in-person on-site work schedule at

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Moffett Field, CA. Travel may be necessary for conference presentations, training, or site visits. The applicant will be expected to work well in teams containing members with diverse skill sets and members at other NASA Centers across the country.

Field of Science: Engineering

Advisors:

Megan MacDonald
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(650) 604-2606

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

Qualifications

Required Qualifications: PhD, Previous experience implementing and operating laser diagnostics in a laboratory or industrial setting, Experience with data analysis software, Good written and verbal communication skills (as evidenced by experience writing papers and presenting at conferences)

Additional Desired Qualification: Experience forming hypotheses from experimental observations

Point of Contact Mikeala

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Doctoral Degree.