Opportunity Title: Development and Application of Advanced Laser-based Measurement Techniques to Transonic, Supersonic, and Hypersonic Flows
Opportunity Reference Code: 0003-NPP-MAR26-LRC-Aero

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0003-NPP-MAR26-LRC-Aero

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:

Design and operation of the next generation of aerospace vehicles will utilize advanced measurement systems. These systems can acquire critical data to validate and inform computational fluid dynamics (CFD) simulations and can provide situational awareness to flight vehicles during entry, descent and landing. Flowfield data such as gas or particle velocity, temperature, and pressure distributions of the gas or particles flowing around and through vehicles are required in wind tunnel testing and in flight. Comparison between measured flowfield properties and computational predictions help designers assess CFD models and engineering designs. Our research group is located in the Research Directorate (RD) at NASA Langley Research Center, in Hampton VA. We develop advanced laser-based measurement techniques for transonic, supersonic, and hypersonic flows and vehicles. Current projects applying laser-induced fluorescence (LIF) to study launch and hypersonic Earth, Mars entry and Lunar and Martian landing vehicles including study of heat shield materials for thermal protection systems. A sensor for entry vehicle navigation is also being developed. The fundamental part of our research involves studying the physics of the laser-based techniques themselves and developing new variations to extend the measurement capability of the technique. The applied part of our research involves making measurements in some of the 30 or more flow facilities located at Langley including the HyMETS hypersonic materials test facility, the 31-inch Mach 10 Wind Tunnel, and associated vacuum spheres. Research opportunities exist for both fundamental and applied aspects of all of these measurement methods including using these advanced measurement techniques to study important fluid mechanics problems.

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Location:
Langley Research Center
Hampton, Virginia

Field of Science: Aeronautics

Advisors:
Paul Michael Danehy
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757-864-4737

This opportunity may require the following: 1- Mandatory drug testing; 2-Random drug testing; 3- Testing prior to initiation of fellowship appointment.

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

Point of Contact Mikeala

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