

**Opportunity Title:** Laboratory Kinetics and Photochemistry for Earth and Planetary Atmospheres

**Opportunity Reference Code:** 0013-NPP-MAR23-JPL-PlanetSci

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

**Reference Code** 0013-NPP-MAR23-JPL-PlanetSci

**Application Deadline** 3/1/2023 6:00:00 PM Eastern Time Zone

**Description** This research opportunity is focused on the study of elementary reactions and photochemical processes important in Earth and planetary atmospheres. For Earth's atmosphere, we focus on radical-radical reactions that control ozone destruction in the stratosphere, including the chemistry of the polar "ozone hole". Our work also includes the study of mechanisms for the formation of urban smog and the degradation of tropospheric air quality by pollutants and biogenic hydrocarbons. The kinetics and photochemistry of the atmospheres of Mars and Titan are studied to enable comparisons between computer models and composition measurements from spacecraft and ground-based instruments. We use state-of-the-art techniques for the study of reaction mechanisms and photochemical processes including laser photolysis and discharge-flow, combined with detection by laser-induced fluorescence, cavity ringdown and frequency modulation spectroscopy and mass spectroscopy.

**References:**

Ingham, T., Sander, S. P. and Friedl, R. R., "Kinetics and product studies of the reaction of Br, Cl and NO with ClOOCl using discharge-flow mass spectrometry", Faraday Discuss., 2005, 130, 1-22

Bayes, K. D., Friedl, R. R. and Sander, S. P., "Kinetics of the reactions of the CHBr<sub>2</sub> and CHBr<sub>2</sub>O<sub>2</sub> radicals with O<sub>2</sub> and NO", J. Phys. Chem. A, 2005, 109, 3045-3051

**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/oiair/export-control>.

Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents (LPR);



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- 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

**Eligibility Requirements**

- **Degree:** Doctoral Degree.