Opportunity Title: Complex organic chemistry in comet 67P-CG
Opportunity Reference Code: 0278-NPP-MAR24-JPL-PlanetSci

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0278-NPP-MAR24-JPL-PlanetSci

How to Apply All applications must be submitted in Zintellect

Application Deadline 3/1/2024 6:00:59 PM Eastern Time Zone

Description **Description:**

Our research team is engaged in a comprehensive investigation that combines laboratory measurements with the analysis of data from Rosetta mission with the objective of exploring the composition of complex organics present on the surface of comet 67P-CG.

The Rosetta mission has provided compelling evidence for the presence of refractory and semi-volatile complex organic materials on the surface of comet 67P-CG. However, the detection thus far has been predominantly spectroscopic, offering only a rough approximation of the composition of the complex material. A unique opportunity to gain deeper insights into this material emerged when the Rosetta spacecraft encountered a significant dust storm on September 5th, 2016, just a few weeks before concluding its mission.

We are seeking a postdoctoral candidate who can participate to this research endeavor. The research activities entail employing a diverse array of laboratory techniques to simulate the chemical and spectroscopic properties of laboratory analogs. The data generated from these simulations will be crucial in enhancing our understanding of the data obtained from the ROSINA instrument of Rosetta mission. Available spectroscopic techniques encompass FTIR spectroscopy, mass spectrometry, UV-Vis spectroscopy, Raman spectroscopy, ellipsometry, along with a multitude of ex-situ analytical techniques at our disposal at JPL. We strongly encourage candidates with experience in laboratory work, vacuum techniques, and spectroscopy to apply and join us.

A. Mahjoub, Altwegg K., Poston M.J., Rubin M., R. Hodyss, Organosulfur non-volatiles on comet 67P: evidence from ROSINA measurements and insights from laboratory simulations. Science Advances. 9, eadh0394 (2023).

A. Mahjoub, M. E. Brown, M. J. Poston, R. Hodyss, B. L. Ehlmann, J. Blacksberg, M. Choukroun, J. M. Eiler, K. P. Hand, Effect of H2S on the Near-infrared Spectrum of Irradiation Residue and Applications to the Kuiper Belt Object (486958) Arrokoth. The Astrophysical Journal Letters. 914, L31 (2021).

A. Mahjoub, R. Hodyss, Thermal Reaction in Cometary and Pre-cometary Ices: Formation of Thiocarbamate in OCS-CH3NH2 Mixed Ices. The Astrophysical Journal. 869, 98 (2018).

Field of Science:

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- Planetary Science

Advisors:

Ahmed Mahjoub
ahmed.mahjoub@jpl.nasa.gov
(626) 491-5089

Applications from 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/oiir/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

Eligibility Requirements

- **Degree:** Doctoral Degree.