**Opportunity Title:** Identification and Mitigation of Contamination within Electric Propulsion Vacuum Facilities
**Opportunity Reference Code:** 0026-NPP-NOV23-GRC-AeroEng

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

**Reference Code** 0026-NPP-NOV23-GRC-AeroEng

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

**Description** Flight and development level electric propulsion hardware for NASA' s Evolutionary Xenon Thruster Commercialization (NEXT-C), Advanced Electric Propulsion System (AEPS), and the Power and Propulsion Element of NASA' s Gateway (PPE) is routinely tested in ground based vacuum facilities. The current practices of the electric propulsion community have the potential to expose mature development hardware and flight hardware to possibly unacceptable contamination or other exposure situations. Sources of contamination may include thruster generated back-sputter materials, oils and greases from thruster diagnostic equipment, moisture absorption/adsorption on hardware, and general environmental contamination resulting from personnel working in large vacuum facilities.

An opportunity exists to mature the methods of identifying, characterizing, mitigating, and cleaning contamination within vacuum facilities that are utilized for electric propulsion testing. The current practices of collecting samples and witness coupons should be reviewed and evaluated. The characterization methods, spectroscopy methods, and identification methods of contamination should be reviewed and evaluated. The overall strategies of avoiding contamination, identifying sources, and preventing future issues must be advanced. This work will include vacuum facility based laboratory testing and characterization methods such as FTIR, Raman, ICP-MS, and EDS. The work will also include documenting current practices as appropriate and drafting recommended practices for future efforts.

**Location:**
Glenn Research Center
Cleveland, Ohio

**Field of Science:**Aeronautics, Aeronautical or Other Engineering

**Advisors:**
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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

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pending status

**Eligibility Requirements**

- **Degree:** Doctoral Degree.