Opportunity Title: Miniaturized instruments enabled by nanomaterials for future space missions
Opportunity Reference Code: 0207-NPP-MAR22-GSFC-TechDev

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0207-NPP-MAR22-GSFC-TechDev

Application Deadline 3/1/2022 6:00:00 PM Eastern Time Zone

Description Nanomaterials offer a unique set of characteristics that can be leveraged to make miniaturized, low power, radiation hard, lightweight instruments for the next generation space missions. This work focuses on the development of nanomaterial-based instruments. Current efforts include the development of a multifunctional sensor platform by printing nanomaterials such as graphene, carbon nanotube, molybdenum disulfide and other transition metal dichalcogenides using additive manufacturing techniques. The effort involves device design, fabrication, characterization, integration and packaging of devices. We are also developing a miniaturized multispectral imager with quantum dot pixels used as a filter array. The effort includes the optimization of the printing process of the quantum dots to fabricate the spectrometer, building an optical test setup for the spectrometer, integration of the overall instrument and characterization of the instrument. These instruments have a wide range of applications in planetary science, earth science and heliophysics.

Location:
Goddard Space Flight Center
Greenbelt, Maryland

Field of Science: Technology Development

Advisors:
Mahmooda Sultana
mahmooda.sultana@nasa.gov
301-286-2158

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/oiir/export-control. Eligibility is currently open to:

- U.S. Citizens;
- U.S. Lawful Permanent Residents;
- Foreign nationals who are in the U.S. at the time of application and on a valid J1 visa; and,
- Foreign nationals, asylees or refugees in the U.S. at the time of application with a valid EAD card and pending I-485 or I-589 forms.

These temporary eligibility limitations have been put in place due to inaccessible U.S. consulates and travel restrictions resulting from the COVID-19 pandemic. Foreign nationals have made many substantive contributions to NASA, as well as to the greater scientific community

throughout the life of the NPP. Therefore, we look forward to the time when the program will be open, once again, to all qualified scientists and engineers.

Eligibility Requirements

- **Degree:** Doctoral Degree.