



NASA SBIR 2019 Phase I Solicitation

H8.01 Low Earth Orbit Platform Utilization and Microgravity Research

Lead Center: JSC

Participating Center(s): ARC, GRC, JPL, JSC

Technology Area: TA6 Human Health, Life Support and Habitation Systems

Use of Low Earth Orbit Platforms for Commercial Technology and Product Development

NASA continues to invest in the near and mid-term development of highly-desirable systems and technologies that provide innovative ways to leverage existing International Space Station (ISS) facilities for new scientific payloads and to provide on-orbit analysis to enhance capabilities. Additionally, NASA is supporting commercial science, engineering, and technology to provide low earth orbit commercial opportunities utilizing the ISS as a way of enabling an economy in Low-Earth Orbit (LEO). Of particular interest in the ISS SBIR program are technologies and flight projects that can lead to significant terrestrial applications due to development in microgravity, leading to commercial product development within a number of disciplines. These disciplines include but are not limited to biotechnology, medical applications, material sciences, and in-space manufacturing, in areas as cell line development, tissue generation/bio-printing, exotic fiber manufacturing, and advanced materials production.

Research conducted on the ISS and technologies demonstrated on it supports Human Exploration and Operations Mission Directorate (HEOMD) goals for continued human presence in LEO space and for eventual deep space exploration missions. Utilization of the ISS is key in a number of technology areas for both Space Technology Mission Directorate (STMD) and Science Mission Directorate (SMD) as well as for HEOMD. In the case of SMD, the ISS provides the platform, including interfaces and resources (power, cooling, data, etc.) for external observation and measurement instruments. For STMD, the ISS along with emerging LEO commercial providers enable in-space testing of cutting edge technology projects used for the development of next generation spacecraft and that have potentially game changing capabilities. A solid foothold for space product research development can continue to be realized through use of the ISS and other commercial LEO platforms which are expected to lead to further maturation of commercial enterprise ventures in LEO.

The expected Technology Readiness Level (TRL) range at completion of the project is 2-6.

References:

- Space Station Research & Technology:
https://www.nasa.gov/mission_pages/station/research/experiments/explorer
- Center for the Advancement of Science in Space: <https://www.iss-casis.org/>