



## NASA SBIR 2018 Phase I Solicitation

### H8.01 ISS Utilization and Microgravity Research

Lead Center: JSC

Participating Center(s): ARC, GRC, JPL, KSC, LaRC, MSFC

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

NASA continues to invest in the near- and mid-term development of highly-desirable systems and technologies that provide innovative ways to leverage existing 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. Utilization of the ISS is limited by available up-mass, down-mass, and crew time as well as by the capabilities of the interfaces and hardware already developed and in use. Innovative interfaces between existing hardware and systems, which are common to ground research, could facilitate both increased and faster payload development and subsequent utilization. Technologies that can be matured rapidly for flight demonstration on the International Space Station are of particular interest. Desired capabilities that will continue to enhance improvements to existing ISS research and support hardware, with the potential of reducing crew time needs, and those that promote commercial enterprise ventures include but are not limited to, the below focus areas:

- Projects that improve, enhance and/or augment science investigations being conducted or planned to be conducted on the ISS.
- Projects leading to the development of new research facilities and the enhancement of others in focus areas involving material science for polymerization, soldering, thermal diffusivity of organic liquids, particles suspension in plasma, and safe containment of samples while undergoing microscopy imaging. Facility enhancements that are efficient and enable high experiment throughput are of major importance.
- Technologies and flight projects that can enable significant terrestrial applications from microgravity development and lead to private sector and/or government agency product development within a number of discipline areas, including biotechnology, medical applications, material sciences, electronics, and pharmaceuticals. This includes modifications to existing flight instruments as well as the development of novel flight hardware for deployment on the ISS.

For the above, research should be conducted to demonstrate technical feasibility and prototype hardware development during Phase I and show a path toward Phase II hardware and software demonstration and delivering an engineering development unit or software package for NASA testing at the completion of the Phase II contract that could be turned into a proof-of-concept system which can be demonstrated in flight.