



NASA SBIR 2008 Phase I Solicitation

S3.04 Propulsion Systems

Lead Center: GRC

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

The Science Mission Directorate (SMD) needs spacecraft with ever-increasing propulsive performance and flexibility for ambitious missions requiring high duty cycles and years of operation. Planetary spacecraft need the ability to rendezvous with, orbit, and conduct in situ exploration of planets, satellites and other solar system bodies (http://www.nap.edu/catalog.php?record_id=10432). Platforms, satellites, and satellite constellations have high-precision propulsion requirements, usually in volume- and power-limited envelopes. This subtopic seeks innovations to meet SMD propulsion requirements, reflecting the goals of NASA's In-Space Propulsion Technology program to reduce the travel time, mass, and cost of SMD spacecraft. Propulsion areas include chemical and electric propulsion systems, propulsion technologies related to sample return missions to asteroids, comets, and other small bodies, propellantless options (such as aerocapture and solar sails), and less developed but emerging propulsion concepts such as advanced plasma thrusters and momentum exchange/electrodynamic reboost (MXER) tethers.

Specific sample return propulsion technologies include, but are not limited to, ascent vehicle propulsion, pumps for pressure-fed propulsion systems, long-term storage capable solid rocket propulsion technologies, lightweight propulsion components, Earth-return propulsion systems, Earth-EDL systems, and Earth Entry Vehicle heat shield materials.

This subtopic also seeks proposals that explore uses of technologies that will provide superior performance in attitude control and overall orbit control. The Small Spacecraft Build effort highlighted in Topic S4 (Low-cost Small Spacecraft and Technologies) of the solicitation participates in this subtopic. Offerors are encouraged to consider this possible flight opportunity when proposing work to this subtopic.

Proposals should show an understanding of one or more relevant science needs, and present a feasible plan to fully develop a technology and infuse it into a NASA program.