# NASA SBIR 2009 Phase I Solicitation

## S3.08 Planetary Ascent Vehicles

**Lead Center: GRC**

**Participating Center(s): AFRC, JPL, MSFC**

NASA aims to design, build and test vehicles that will be launched from the surface of other planets and place a payload, Orbiting Sample (OS), into orbit. We are seeking proposals for the development of innovative technologies to support future planetary ascent vehicles. Immediate focus is the Mars ascent vehicle. Technology innovations should either enhance vehicle capabilities (e.g., launch success probability, mission success, improved performance or margins, and improved environmental robustness) or ease implementation in spaceborne missions (e.g., reduce size, mass, power, and thermal requirements, improve reliability and ability to withstand the ~20 g lateral g-loading, or lower cost). The areas of interest for this call are listed below.

Advanced solid propellant engine system technologies:

- Solid propellant technology with specific impulse performance potential higher than HTPB and CTPB;
- Propellant blend with high performance and low storage and operating capability down to 150 K;
- Low temperature seals and components;
- Light weight and reliable thrust vector control;
- Other light weight system and component technologies.

Alternate propellants, thrusters and propulsion system technologies for the planetary ascent vehicles:

- Higher performing monopropellants with specific impulse >240 secs;
- High chamber pressure thrusters > 500 psia;

- Pressurization component technologies to reduce system mass (filters, solenoid valves, latch valves, tanks, fill and drain and check valves);
- Small lightweight pump technologies to operate at >500 psi output pressure;
- Non-pyrotechnic isolation valves.

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.