



## **NASA SBIR 2009 Phase I Solicitation**

### **X4.01 Advanced Radiation Shielding Materials and Structures**

**Lead Center: LaRC**

**Participating Center(s): ARC, MSFC**

Advances in radiation shielding materials and structures technologies are needed to protect humans from the hazards of space radiation during NASA missions. The primary area of interest for this 2009 solicitation is radiation shielding materials systems for long-duration lunar surface galactic cosmic radiation (GCR) protection. The innovative materials systems should have radiation shielding effectiveness approaching that of polyethylene, for an equivalent areal density (grams per square centimeter). This can be determined either by radiation transport calculations or by radiation exposure measurements. Research should be conducted to demonstrate technical feasibility during Phase 1 and to show a path toward a Phase 2 technology demonstration. Specific areas in which SBIR-developed technologies can contribute to NASA's overall mission requirements include the following:

- Innovative lightweight radiation shielding materials and structures to shield humans in crew exploration vehicles, landers, habitats, and rovers;
- Physical, mechanical, structural, and other relevant characterization data to validate and qualify multifunctional radiation shielding materials and structures;
- Innovative processing methods to produce quality-controlled advanced radiation shielding materials of all forms.