



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

### **X5.03 Composite Structures - Manufacturing**

**Lead Center: MSFC**

**Participating Center(s): GRC, LaRC**

The SBIR subtopic area of Composites Materials and Manufacturing centers on developing lightweight structures using advanced materials technologies, and new manufacturing processes. The objective of the subtopic is to advance technology readiness levels of composite materials and manufacturing for Ares launch vehicle applications resulting in structures having consistent, predictable response.

Areas of interest include: polymer matrix composites (PMCs), large-scale manufacturing; innovative automated processes (e.g., fiber placement); advanced non-autoclave curing; bonding of composite joints; and damage-tolerant/repairable structures.

Performance metrics include: achieving adequate structural and weight performance; analysis supported by test approach; manufacturing and life-cycle affordability; ability to demonstrate capabilities at the laboratory scale and confidence for scale-up; validation of confidence in design, materials performance, and manufacturing processes; quantitative risk reduction capability; minimum sensitivity and maximum robustness for operability.

Lightweight structures and advanced materials have been identified as a critical need since the reduction of structural mass translates directly to vehicle additional performance, reduced cost, and increased up and down mass capability.

Research should be conducted to demonstrate technical feasibility during Phase 1 and show a path toward a Phase 2 prototype demonstration. Demonstrate manufacturing technology that can be scaled up for very large structures.

This subtopic is also a subtopic for the "Low-Cost and Reliable Access to Space (LCRATS)" topic. Proposals to this subtopic may gain additional consideration to the extent that they effectively address the LCRATS topic (See topic O5 under the Space Operations Mission Directorate).

