



NASA SBIR 2008 Phase I Solicitation

X4.06 Composite Structures - Manufacturing

Lead Center: MSFC

Participating Center(s): ARC, GRC, GSFC, LaRC

This subtopic solicits innovative research for advanced composite materials processing and characterization concepts that support the development of lightweight structures technologies that should be applicable for space transportation vehicle systems. Interests are in advanced composite structures, which can be tailored for strength, stiffness, weight and temperature capabilities with high performance at a lower cost. Reduction in structural mass translates directly to additional up-and-down mass capability that would facilitate logistics and increase science return for future missions. Advanced composites are targeted that could be implemented into launch vehicles, lunar landers, and habitats. Innovations in technology are needed for manufacturing, processing and bonded joints for structural and cryogenic applications. Manufacturing processes of interest are automated composite fiber/tape placement, non-autoclave curing, and bonding of composite joints. Development of concepts can include material system characterization, proof-of-concept demonstrations for lightweight structures, enabling performance, and affordability (including life cycle costs) enhancement.

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.