

Technology Area: *SiC/SiC Ceramic Matrix Composites (CMC)*

GRC Point of Contact: *Jim DiCarlo (3-5514)*

Description of Technologies:

- *Constituent Materials/Processes for suite of GRC-developed SOTA composites with long-term structural capability under oxidizing conditions to > than 2700°F*
- *Design Guidelines, Data-bases, Evaluation and Test Methods for high-T CMC*

Potential Applications: *Re-usable lightweight structural products for use temperatures well beyond metallic capability, and for durability well beyond monolithic ceramics and carbon composites. E.g., small and large hot section components in advanced propulsion (aero / space) and power (chemical / nuclear) systems for increased efficiency and reduced emissions*

Relevance to Space Exploration: *Space propulsion components, thermal protection systems, large deployable atmospheric entry shields, advanced lower-weight higher-efficiency nuclear power systems, planet-based power systems*

Industry Co-developers and Industry Consumers: *SiC/SiC CMC systems developed solely at GRC, demonstrated at a variety of CMC vendors, and of high interest in the military (e.g., Joint Strike Fighter Program) and at commercial turbine engine end-users (AADC, P&W, GE), as well as at major CMC vendors (Goodrich, COI Ceramics) for tech transfer by NASA Space Act Agreements*

Current TRL Level: *5-6 (Tech transfer to major CMC vendors, GRC vane demo)*

Technical Risks Associated with Implementation: *High acquisition costs for fiber and CMC processes, but SiC-fiber Man-Tech program being advocated by military for JSF Program. Needs prime-reliant EBC for long-term combustion applications.*

