

## **SiCf/SiC CERAMIC MATRIX COMPOSITE – A TURBINE ENGINE PERSPECTIVE**

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Evolving environmental challenges and customer needs are creating more aggressive requirements for future gas turbine engines. These requirements include: reduced specific fuel consumption, reduced weight, reduced emissions, longer on-wing times and increased performance. Achieving these targets requires increased environmental durability, higher engine operating temperatures, reduced cooling air usage, and higher overall pressure ratios. This combination has pushed single crystal nickel alloys and high efficiency cooling schemes to operational limits. This limitation has resulted in the increased demand for the development of SiC-based ceramic matrix composites (CMCs) and their supporting technologies. The successful insertion of CMCs into turbine engine requires significant development in various areas in order achieve full benefit. These areas include: high temperature materials ( $T > 1350^{\circ}\text{C}$ ), environmental coatings, lifing, joining, component design and ceramic – metallic interfaces. This paper will present on current efforts to insert CMC technology into turbine engines, required areas of development, and on potential synergies that can be created between the turbine engine and ultra-high temperature ceramic community.