

## Processing of SiC nano-ceramics with multilayered architecture

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Silicon carbide is one of the most promising materials for thermal protection system (TPS) of future reusable spacecraft because of its low density, excellent high temperature mechanical properties and self passivating behavior in oxidizing environment. However, its low fracture toughness remains a major concern for its widely application in severe environment. The key factor for improving toughness is the presence of weak interfaces or interlayers which allow energy dissipation before fracture through mechanisms of crack deflection, pull-out and bridging of fibre or whisker, and interface delamination. For these reasons SiC-based composites with different types of carbon display improved toughness. In this study we use three different reinforcements, namely carbon nanotubes, graphene and carbon black and present a microstructural architecture based on the stacking of different layer alternating layers of nano-SiC without reinforcement and of nano-SiC layers with carbon nanotubes, graphene or carbon black.

## References

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