



Thermal Barrier Coatings

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Message from the Guest Editor

Thermal barrier coatings (TBCs) are compulsorily applied on components operating at temperatures over or close to their melting temperatures. The thermal insulation provided by TBCs to the parts allow both to maintain their mechanical properties and to limit access of the aggressive environments to the metal substrates. Over the last decades, many different materials –mostly ceramics- have been fabricated through different methods. For the same type of ceramic material, the resulting properties can be quite different depending on such methods. An adequate balance between thermal insulation, mechanical properties and durability is often difficult to find though quite robust TBCs are operating today.

However, the increased operating temperatures of thermal power engines in the energy and transport systems requires further investigations of more advanced and exotic TBC systems that include new compositions, microstructures, and multilayering, among others. Such new TBCs will respond to the appearance of new degradation phenomena in many practical applications. Further, sensor coatings allow one to facilitate quality control and the maintenance operations of the coatings.





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