



Advances in Thermal Barrier Coatings (TBCs): Materials, Fabrication, Corrosion and Applications

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Message from the Guest Editors

Dear Colleagues,

We would like to invite you to submit your research to this Special Issue, "Advances in Thermal Barrier Coatings (TBCs): Materials, Fabrication, Corrosion and Applications". As one of the key technologies for aero-engines, thermal barrier coatings (TBCs) have been applied to hot-section components of combustors, high-pressure turbine (HPT) blades, and HPT nozzles for decades. TBCs enable the aero-engines to operate at higher temperatures; therefore, efficiency can be improved, emissions can be reduced, and thrust can be increased. On the other hand, the higher operating temperature leads to some unavoidable limitations in TBC use, including accelerated sintering, phase transformation, and corrosion resulting from environmental deposits (CMAS) and molten salt. These cause the premature failure of TBCs. In the interest of improving the performance of TBCs and elongating their lifetime, we face a practical requirement for alternative TBC materials to be developed, with progress required in TBC fabrication science and technologies, TBC design strategies, corrosion protective methods and failure mechanisms.





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Message from the Editorial Board

Now more than ever, research is asked to deliver knowledge and technologies to solve the major challenges faced by our society. The development of new materials and devices for (without the ambition to be exhaustive) energy, health and food technology, together with the need for establishing processes that reduce the impact on critical resources and the environment, is indeed in the spotlight of most contemporary research. Surface science and engineering play a key role in this regard, with an incredible potential in delivering new and deep scientific understanding and technical solutions essential to solve most of the major societal challenges.

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