



Thermal Barrier Coatings: Structures, Properties and Application

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Message from the Guest Editor

This Special Issue aims to bring together original research articles and topical reviews with a focus on thermal barrier coatings for high-temperature applications. Thermal barrier coatings are used in thermally stressed areas in gas turbines and aircraft engines to protect structural components and increase process efficiency. It is important to gain a better understanding of the failure mechanism of traditional thermal barrier coating systems at elevated temperatures. It is also necessary to develop novel material solutions and coating processes. These new insights will pave the way to (1) further increasing gas temperatures, (2) enhancing the lifetime of coating systems, and (3) helping to establish thermal barrier coatings in novel engineering solutions. In this Special Issue, articles with fundamental or practical aspects are welcome. Research areas may include (but are not limited to) the following:

- Processes for coating deposition
- Coating modification
- Material systems and selection
- Mechanical and thermal testing
- Theoretical and computational modeling
- Characterization of microstructures and interfaces
- Lifetime modeling and prediction





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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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