

# Editorial



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Thermal barrier coatings (TBCs) are coating systems which protect the metallic components in gas turbine engines from the hot combustion gases. Their application allows an increase of combustion temperatures far beyond the melting point of the super alloys used for structural parts, such as blades and vanes. Although TBCs were introduced several decades ago, they are still a subject of intense research, both in academia and in industry. Considerable progress has been made through the years with respect to reliability, lifetime, and temperature capability, but there still is need for further improvement of the properties to fully integrate the TBC system into the design of a gas turbine engine, and by this, to increase the efficiency of the engine.

In this June issue of the *Journal of Thermal Spray Technology*, selected papers presented at the 22nd International Conference on Surface Modification Technologies in Trollhättan, Sweden, September 22-24, 2008, are presented. In these papers, several of the most relevant research topics are addressed. Essential for a successful application of any coating system, and especially of TBCs, is a reliable manufacture, which is discussed in the paper of Sampath et al. describing the use of sensors in thermal spray. Saeidi et al. describe that, instead of vacuum plasma-spraying (VPS), cost-efficient spraying methods like high velocity oxygen fuel (HVOF) can be applied to produce high performance bond coats. The positive influence of higher porosity levels on the lifetime of thick thermal barrier coatings is discussed by Giolli and co-workers. Two papers investigate the performance of new coating materials for TBCs. Jiang et al. discuss a new class of bond coats consisting of MAX phases, which appear to be difficult to manufacture by thermal spray. Jarligo et al. look into new topcoat materials consisting of high-melting point perovskites, which show promising properties, although there are processing issues yet to be solved. Vassen et al. describe recent developments in the TBC area including double layer systems, high reflectivity, and sensorial coatings and new processing methods such as suspension plasma spraying. In summary, the presented papers give an interesting overview on recent relevant research activities in the field of thermal barrier coatings.

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