High Temperature Coatings

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The success of many high temperature materials and systems is largely dependent on the durability of protective coatings. To that end, much effort is still devoted to the understanding of the mechanisms of coating interaction with substrate and environment.

The papers presented in this special issue cover a large number of coating and substrate materials. Of particular interest are thermal barrier coating (TBC) systems, which comprise a combination of ceramic and metallic coatings on a metallic substrate. Use of TBCs allows for increasing the operation temperature of aero-engines, which has the beneficial effects of improving thermal efficiency and reducing emissions of greenhouse gas species. In the present issue, papers on state-of-the-art and more advanced TBCs are presented, mainly on superalloy substrates but also on γ -TiAl. The durability of these systems is studied with respect to oxidation but also to mechanical degradation at high temperatures. Metallic coatings are also emphasized in this issue, such as bond coats on high temperature alloys and aluminides on steels.

The following key papers stem from presentations given at the 8th International Symposium on High Temperature Corrosion and Protection of Materials (HTCPM2012), which was held at Les Embiez Island, France, on 20–25th May, 2012.

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