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Luminescence-Based Diagnostics of Thermal Barrier Coating Health and Performance

By Jeffrey I. Eldridge

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 26 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Thermal barrier coatings (TBCs) are typically composed of translucent ceramic oxides that provide thermal protection for metallic components exposed to high-temperature environments in both air- and land-based turbine engines. For advanced turbine engines designed for higher temperature operation, a diagnostic capability for the health and performance of TBCs will be essential to indicate when a mitigating action needs to be taken before premature TBC failure threatens engine performance or safety. In particular, it is shown that rare-earth-doped luminescent sublayers can be integrated into the TBC structure to produce luminescence emission that can be monitored to assess TBC erosion and delamination progression, and to map surface and subsurface temperatures as a measure of TBC performance. The design and implementation of these TBCs with integrated luminescent sublayers are presented. This item ships from La Vergne, TN. Paperback.



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