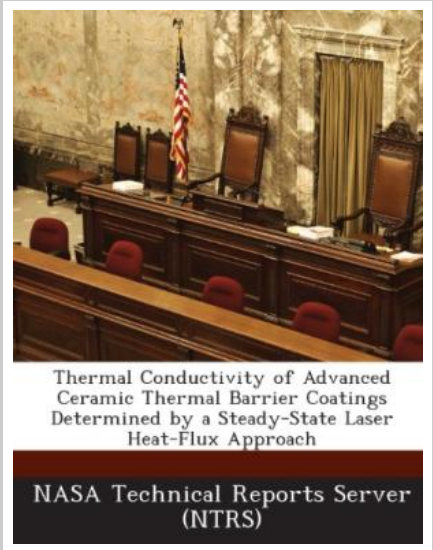




# Thermal Conductivity of Advanced Ceramic Thermal Barrier Coatings Determined by a Steady-State Laser Heat-Flux Approach

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.The development of low conductivity and high temperature capable thermal barrier coatings requires advanced testing techniques that can accurately and effectively evaluate coating thermal conductivity under future high-performance and low-emission engine heat-flux conditions. In this paper, a unique steady-state CO2 laser (wavelength 10. 6 microns) heat-flux approach is described for determining the thermal conductivity and conductivity deduced cyclic durability of ceramic thermal and environmental barrier coating systems at very high temperatures (up to 1700 C) under large thermal gradients. The thermal conductivity behavior of advanced thermal and environmental barrier coatings for metallic and Si-based ceramic matrix composite (CMC) component applications has also been investigated using the laser conductivity approach. The relationships between the lattice and radiation conductivities as a function of heat flux and thermal gradient at high temperatures have been examined for the ceramic coating systems. The steady-state laser heat-flux conductivity approach has been demonstrated as a viable means for the development and life prediction of advanced thermal barrier coatings for future turbine engine applications. This item ships from La Vergne,TN. Paperback.

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