

ABSTRACT

MULTI-MATERIAL THERMAL BARRIER COATING SYSTEM

The thermal barrier coating system comprises a matrix of a first chemistry with multiple embedded second phases of a second chemistry. The matrix comprises a stabilized zirconia. The second regions comprise at least 40 mole percent of oxides having the formula Ln_2O_3 , where Ln is selected from the lanthanides La through Lu, Y, Sc, In, Ca, and Mg with the balance zirconia (ZrO_2), hafnia (HfO_2), titania (TiO_2), or mixtures thereof. The second phases have a characteristic thickness (T_6) of less than 2.0 micrometers (μm). The spacing between second phases has a characteristic thickness (T_5) of less than 8.0 micrometers (μm).

Fig. 1