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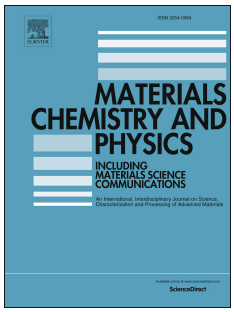

Preparation and thermophysical properties of plasma sprayed lanthanum zirconate

S. Sivakumar, K. Praveen, G. Shanmugavelayutham

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Preparation and thermophysical properties of plasma sprayed lanthanum zirconate

S. Sivakumar, K. Praveen and G. Shanmugavelayutham*

Plasma Processing Laboratory, Department of Physics, Bharathiar University,

Coimbatore 641 046, India

*E-mail: sgsvelu@buc.edu.in

Abstract

Lanthanum Zirconate (LZ) has been found as prosperous thermal barrier coating (TBCs) material for its high melting point, phase stability and lower thermal conductivity. LZ has been synthesized by planetary ball milling method using a mixture of La_2O_3 and ZrO_2 powders in a 1:2 mole ratio for 24 hours. The synthesized LZ was deposited on SS substrate by a DC non-transferred atmospheric plasma spray (APS) system. X-ray difraction and field emission scanning electron microscopic investigations revealed the formation of a single phase formation with the occurence of pores and the formation of lamella particles. Thermal conductivity of LZ has been found in the range 0.46 to 0.6 W m^{-1} K^{-1} at 24 kW which was much lower than that shown by YSZ (yttria stabilised zirconia).

Keywords: Plasma spray torch, Lanthanum zirconate (LZ), TBC