

## FABRICATION OF DOUBLE-CERAMIC-LAYER TBCS BY SUSPENSION PLASMA SPRAY

Seongwon Kim, Korea Institute of Ceramic Engineering and Technology  
woods3@kicet.re.kr

Soyul Lee, Korea Institute of Ceramic Engineering and Technology  
Yoon-Suk Oh, Korea Institute of Ceramic Engineering and Technology  
Sung-Min Lee, Korea Institute of Ceramic Engineering and Technology  
Hyung-Tae Kim, Korea Institute of Ceramic Engineering and Technology  
Byung-Koog Jang, National Institute of Materials Science

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Rare-earth zirconates, such as  $\text{La}_2\text{Zr}_2\text{O}_7$  and  $\text{Gd}_2\text{Zr}_2\text{O}_7$ , have been investigated as one of the candidates for replacing conventional yttria-stabilized zirconia (YSZ) for thermal barrier coating (TBC) applications at higher turbine inlet temperatures. Rare-earth zirconate oxides exhibit little phase transformation upon heating up to melting temperature as well as low thermal conductivity, where as their mechanical properties is inferior to those of YSZ TBCs. Double-ceramic-layer (DCL) TBCs have been investigated in order to take advantage of beneficial characteristics of both YSZ and rare-earth zirconate.

In this study, the fabrication of DCL-TBCs with YSZ layer and rare-earth-zirconate top layer by using suspension plasma spray are reported. Microstructure, compositional profile, thermal conductivity, and thermal durability of DCL-TBCs are characterized. The usefulness of these DCL-TBCs is also discussed.