

# Novel Lanthanum Zirconate Thermal Barrier Coatings for Gas Turbines

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Pyrochlore lanthanum zirconate ( $\text{La}_2\text{Zr}_2\text{O}_7$ ) is a very promising candidate material for thermal barrier coating (TBC) applications. Layered microstructure was designed and prepared using air plasma spray to improve the thermal durability. The physical, mechanical and thermal properties of the coatings were measured.  $\text{La}_2\text{Zr}_2\text{O}_7$  shows outstanding phase stability in high temperatures and lower thermal conductivity than commercial 8YSZ TBCs material. Coating lifetime performance was also estimated through the JETS (Jet Engine Thermal Simulation) and TGMF (Thermal Gradient Mechanical Fatigue) tests.