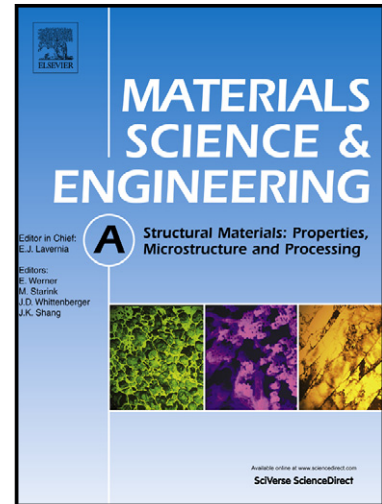


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**Particle In-flight Behavior and Its Influence on the
Microstructure and Mechanical Property of Plasma Sprayed
La₂Ce₂O₇ Thermal Barrier Coatings**

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Abstract

This paper aims to elaborate the particle in-flight behavior during plasma spraying and its significance in determining the microstructure and mechanical properties of La₂Ce₂O₇ (LC) coatings. One Box-Behnken Design (BBD) method was applied to analyze the effect of spray parameters on average velocity and temperature of in-flight particles during spraying. LC coatings were characterized in terms of the microstructure, hardness and fracture toughness. It was found that the argon flow rate was the most important parameter that influenced the velocity of particles, however the main factors of affecting the particles temperature was the hydrogen flow rate.

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