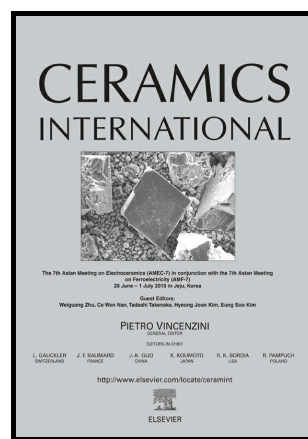


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Hot corrosion behavior of $\text{BaLa}_2\text{Ti}_3\text{O}_{10}$ exposed to
calcium-magnesium-alumina-silicate at elevated temperatures

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Abstract

Calcium-magnesium-alumina-silicate (CMAS) attack has been regarded as one of the significant failure mechanisms for thermal barrier coatings (TBCs). In this study, CMAS corrosion behavior of $\text{BaLa}_2\text{Ti}_3\text{O}_{10}$, a novel TBC material, is investigated at 1300 °C and 1350 °C for 0.5 h, 4 h, 12 h and 24 h. Results reveal that $\text{BaLa}_2\text{Ti}_3\text{O}_{10}$ has high resistance to molten CMAS infiltration, attributable to the formation of a dense reaction layer. X-ray diffraction, scanning electron microscope, energy dispersive spectroscope, transmission electron microscope confirm that the layer consists of apatite, celsian and perovskite phases. With increased corrosion duration, the layer retains good phase stability and the thickness increases. The formation of

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