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**High temperature oxidation resistance of La₂O₃-modified ZrB₂-SiC coating for
SiC-coated carbon/carbon composites**

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Abstract

To improve the long-term anti-oxidation performance of carbon/carbon (C/C) composites at high temperature, La₂O₃-modified ZrB₂-SiC (ZSL) coating was prepared on SiC-coated C/C composites by pack cementation. The results indicated that significant improvement was achieved on the oxidation resistance of ZSL coated specimens compared with ZrB₂-SiC (ZS) coating for SiC-coated C/C composites at 1500 °C and 1600 °C. The mass loss of the ZSL coated specimen was merely 0.6% after a static oxidation test at 1500 °C for 550h, while that of the ZS coated specimen was 1.89% at the same condition. And the ZSL coating can also protect C/C composites from oxidation for 107 h at 1600 °C with the mass loss of 0.92%. Moreover, the mass gain of ZSL coated specimen was 0.35% when it subjected to the thermal shock between 1500 °C and room temperature for 50 times. The excellent protection ability against oxidation and thermal shock could be attributed to the synergetic effects of generated La-Si-O compound glassy layer and thermally stable

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