

Accepted Manuscript

Title: New anti-ablation candidate for carbon/carbon composites: preparation, composition and ablation behavior of $\text{Y}_2\text{Hf}_2\text{O}_7$ coating under an oxyacetylene torch

Authors: Shengyue Gu, Shouyang Zhang, Fei Liu, Wei Li



PII: S0955-2219(18)30472-2
DOI: <https://doi.org/10.1016/j.jeurceramsoc.2018.07.042>
Reference: JECS 12010

To appear in: *Journal of the European Ceramic Society*

Received date: 5-2-2018
Revised date: 21-7-2018
Accepted date: 26-7-2018

Please cite this article as: Gu S, Zhang S, Liu F, Li W, New anti-ablation candidate for carbon/carbon composites: preparation, composition and ablation behavior of $\text{Y}_2\text{Hf}_2\text{O}_7$ coating under an oxyacetylene torch, *Journal of the European Ceramic Society* (2018), <https://doi.org/10.1016/j.jeurceramsoc.2018.07.042>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

New anti-ablation candidate for carbon/carbon composites: preparation, composition and ablation behavior of $\text{Y}_2\text{Hf}_2\text{O}_7$ coating under an oxyacetylene torch

Shengyue Gu^a, Shouyang Zhang^{a*}, Fei Liu^{a,b}, Wei Li^a

^a State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China

^b College of Mechanical and Electrical Engineering, Xi'an Polytechnic University, Xi'an 710048, China

Corresponding author: Shouyang Zhang*

E-mail address: zhangshouyang@nwpu.edu.cn; zhangshouyang_npu@outlook.com

Abstract

$\text{Y}_2\text{Hf}_2\text{O}_7$ possesses low thermal conductivity and high melting point, which make it promising for a new anti-ablation material. For evaluating the thermal stability and the potential applications of $\text{Y}_2\text{Hf}_2\text{O}_7$ on anti-ablation protection of C/C composites, $\text{Y}_2\text{Hf}_2\text{O}_7$ ceramic powder was synthesized by solution combustion method and $\text{Y}_2\text{Hf}_2\text{O}_7$ coating was prepared on the surface of SiC coated C/C composites using SAPS. Results shown that the coating exhibits good ablation resistance under the heat flux of 2.4 MW/m^2 with the linear and mass ablation rates are $0.16 \mu\text{m}\cdot\text{s}^{-1}$ and $-0.028 \text{ mg}\cdot\text{s}^{-1}$, respectively, after ablation for 40 s. With the prolonging of the ablation time, the increasing thermal

Download English Version:

<https://daneshyari.com/en/article/8948559>

Download Persian Version:

<https://daneshyari.com/article/8948559>

[Daneshyari.com](https://daneshyari.com)