

## Accepted Manuscript

Mechanical and oxidation properties of C/SiC corrugated lattice core composite sandwich panels

Fan Yang, Su Cheng, Tao Zeng, Zhi-hai Wang, Guo-dong Xu, Junjun Zhai, Dai-ning Fang

PII: S0263-8223(16)31648-8

DOI: <http://dx.doi.org/10.1016/j.compstruct.2016.09.034>

Reference: COST 7760

To appear in: *Composite Structures*

Received Date: 27 August 2016

Accepted Date: 13 September 2016



Please cite this article as: Yang, F., Cheng, S., Zeng, T., Wang, Z-h., Xu, G-d., Zhai, J., Fang, D-n., Mechanical and oxidation properties of C/SiC corrugated lattice core composite sandwich panels, *Composite Structures* (2016), doi: <http://dx.doi.org/10.1016/j.compstruct.2016.09.034>

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.

# Mechanical and oxidation properties of C/SiC corrugated lattice core composite sandwich panels

Fan Yang <sup>a</sup>, Su Cheng <sup>a</sup>, Tao Zeng <sup>a,\*</sup>, Zhi-hai Wang <sup>a</sup>, Guo-dong Xu <sup>a</sup>, Junjun Zhai <sup>a</sup>, Dai-ning

Fang <sup>b</sup>

<sup>a</sup> Department of Engineering Mechanics, Harbin University of Science and Technology, Harbin

150080, P.R. China

<sup>b</sup> School of Aerospace Engineering, Beijing Institute of Technology, 100081, Beijing, P.R.China

## Abstract

Carbon fiber reinforced silicon carbide (C/SiC) corrugated lattice core composite sandwich structures were fabricated by precursor infiltration and pyrolysis (PIP) with polycarbosilane as the matrix precursor, and effects of high-temperature oxidation on the microstructures and mechanical properties of C/SiC composite sandwich structures were investigated. It was found that the high-temperature oxidation had a great effect on the mechanical properties of C/SiC composite sandwich structures. When the oxidation time was 30 min, the compression strength of C/SiC composite sandwich structures first decreased and then increased with the elevation of oxidation temperature controlled by two competition mechanisms. The compression modulus changed slightly. Different fracture behaviors were shown after oxidation at 1200°C and 1600°C. The compression strength and modulus of C/SiC composite sandwich structures after oxidation at 1600°C decreased with oxidation time. The brittle fracture behavior appeared after 60 min oxidation.

**Keywords:** C/SiC; precursor infiltration and pyrolysis; lattice sandwich; oxidation;

---

\* Corresponding author. Tel.: +86 451 86390832; fax: +86 451 86390830.  
E-mail address: [taozeng@hrbust.edu.cn](mailto:taozeng@hrbust.edu.cn) (T.Zeng)

Download English Version:

<https://daneshyari.com/en/article/4912336>

Download Persian Version:

<https://daneshyari.com/article/4912336>

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