

Accepted Manuscript

Study of random fatigue behavior of C/SiC composite thin-wall plates

Zengewu Wu, Jun Liang, Maoqing Fu, Guodong Fang, Zhengong Zhou

PII: S0142-1123(18)30285-8

DOI: <https://doi.org/10.1016/j.ijfatigue.2018.07.001>

Reference: JIJF 4754

To appear in: *International Journal of Fatigue*

Received Date: 17 November 2017

Revised Date: 24 June 2018

Accepted Date: 1 July 2018



Please cite this article as: Wu, Z., Liang, J., Fu, M., Fang, G., Zhou, Z., Study of random fatigue behavior of C/SiC composite thin-wall plates, *International Journal of Fatigue* (2018), doi: <https://doi.org/10.1016/j.ijfatigue.2018.07.001>

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.

Study of random fatigue behavior of C/SiC composite thin-wall plates

Zengewu Wu^a, Jun Liang^{b,*}, Maoqing Fu^a, Guodong Fang^{a,*}, Zhengong Zhou^a

^a Science and Technology on Advanced Composites in Special Environments Key Laboratory, Harbin Institute of Technology, Harbin, 150001, PR China;

^b Institute of Advanced Structure Technology, Beijing Institute of Technology, Beijing, 100081, PR China.

* Corresponding author: E-mail: fanggd@hit.edu.cn (G.D. Fang), liangjun@bit.edu.cn (J. Liang).

Abstract

As an alternative method of acoustic experiment, vibration tests of C/SiC thin-wall plates were conducted to study the random fatigue behavior. The vibration specimen was clamped with cantilever boundary and subjected to limited-bandwidth vibration excitation. The strain history and fundamental frequency of the specimens were monitored during the vibration test. It was found that the measured strain value and strain amplitude value accorded with Gauss and Rayleigh distribution, respectively. The fundamental frequency decreased greatly when the vibration specimen failed, which could be recognized as failure criterion for the specimen under random loading. The microscopic fracture morphologies showed that the majority failure mode of fibers in the longitudinal and transverse directions were fiber pull-out and fiber splitting, respectively. The tensile force induced by reversed bending load is the main driving force for damage in specimen.

Keywords: C/SiC composites; Random fatigue; Fundamental frequency; Fatigue failure

Download English Version:

<https://daneshyari.com/en/article/7171311>

Download Persian Version:

<https://daneshyari.com/article/7171311>

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