

## Accepted Manuscript

Mechanical behavior of carbon fibers polyphenylene sulfide composites exposed to radiant heat flux and constant compressive force

Y. Carpier, B. Vieille, M.A. Maaroufi, A. Coppalle, F. Barbe

PII: S0263-8223(17)33993-4

DOI: <https://doi.org/10.1016/j.compstruct.2018.05.086>

Reference: COST 9725

To appear in: *Composite Structures*

Received Date: 28 November 2017

Revised Date: 15 May 2018

Accepted Date: 18 May 2018



Please cite this article as: Carpier, Y., Vieille, B., Maaroufi, M.A., Coppalle, A., Barbe, F., Mechanical behavior of carbon fibers polyphenylene sulfide composites exposed to radiant heat flux and constant compressive force, *Composite Structures* (2018), doi: <https://doi.org/10.1016/j.compstruct.2018.05.086>

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 BEHAVIOR OF CARBON FIBERS POLYPHENYLENE SULFIDE COMPOSITES EXPOSED TO RADIANT HEAT FLUX AND CONSTANT COMPRESSIVE FORCE

Y. Carpier<sup>1</sup>, B. Vieille<sup>1</sup>, M. A. Maaroufi<sup>1</sup>, A. Coppalle<sup>2</sup>, F. Barbe<sup>1</sup>

<sup>1</sup>Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen,  
France

<sup>2</sup>Normandie Univ, UNIROUEN, INSA Rouen, CNRS, CORIA, 76000 Rouen, France

Email: yann.carpier@insa-rouen.fr

**Keywords:** Thermoplastic composites, Fire, Compression, Aeronautical applications,

## Abstract

The thermo-mechanical behavior of Carbon/PPS laminates under a constant compressive stress and radiant heat flux has been studied in the case of a quasi-isotropic layup. Though lots of studies focus on the time-to-failure, the present work is aimed at investigating the influence of thermal and mechanisms phenomena on the fire behavior of composite structures.

The mechanical response is studied at different scales. From the total macroscopic strain standpoint, the response is divided into three stages, referred to as transient, stationary and failure stages. During these stages, different thermal and mechanical mechanisms compete and prevail depending on the applied compressive stress: thermal and thermo-chemical expansion, decomposition, changes in the mechanical

Download English Version:

<https://daneshyari.com/en/article/6702900>

Download Persian Version:

<https://daneshyari.com/article/6702900>

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