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

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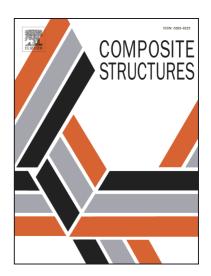
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ACCEPTED MANUSCRIPT

MECHANICAL BEHAVIOR OF CARBON FIBERS POLYPHENYLENE

SULFIDE COMPOSITES EXPOSED TO RADIANT HEAT FLUX AND

CONSTANT COMPRESSIVE FORCE

Y. Carpier¹, B. Vieille¹, M. A. Maaroufi¹, A. Coppalle², F. Barbe¹

¹ Normandie Univ, UNIROUEN, INSA Rouen, CNRS, Groupe de Physique des Matériaux, 76000 Rouen,

France

² Normandie Univ, UNIROUEN, INSA Rouen, CNRS, CORIA, 76000 Rouen, France

Email: yann.carpier@insa-rouen.fr

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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

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