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Michel TOURLONIAS, Marie-Ange BUENO, Dominique POQUILLON

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## Friction of carbon tows and fine single fibres

Michel TOURLONIAS,<sup>1\*</sup> Marie-Ange BUENO,<sup>1</sup> and Dominique POQUILLON<sup>2</sup>

<sup>1</sup> Laboratoire de Physique et Mécanique Textiles, Ecole Nationale Supérieure  
d'Ingénieurs Sud Alsace, University of Haute-Alsace, 11 rue Alfred Werner, 68093

Mulhouse, France

<sup>2</sup> CIRIMAT, Université de Toulouse, 4 allée Emile Monso - BP 44362, 31030

TOULOUSE Cedex 4, France

### Abstract

The aim of this study conducted on carbon tows and single fibres is to highlight some friction behaviours to help better understand the friction mechanisms that occur during the manufacture of carbon composites. These mechanisms are responsible for damage that reduces the specifications and lifetime of mechanical parts. An experiment has been developed in order to rub together two carbon tows, or two single carbon fibres (with a diameter down to 5  $\mu\text{m}$ ), at an angle of  $90^\circ$ . The influences of friction velocity, normal load, and type of carbon fibre have been studied. For both tows and fibres the friction follows the Coulomb's law because there is no influence of the velocity and the normal load in the tested range. The rearrangement of fibres within the tow has been shown to be fundamental. For the single fibre, the role of the Young's modulus and the sizing treatment is important.

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\*Corresponding author. Tel: +33 3 89 33 66 73. E-mail: michel.tourlonias@uha.fr

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