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## CARBON FIBRE FUNCTIONALIZATION BY PLASMA TREATMENT

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**C**urrent technological demands are increasingly stretching the properties of advanced materials to expand their applications to more severe or extreme conditions, whilst simultaneously seeking cost-effective production processes and final products. Composites based on carbon fibre (CF) are a hot topic in this field. In order to increase the CF adhesion to polymer, functionalization surfaces are needed. Different surface enhancing and modification techniques on CF based materials show different behaviour. In the framework of the EU MODCOMP project (contract 685844), we aimed to develop novel fibre-based materials for technical, high value, high performance products for non-clothing applications. CF plasma functionalization is a critical step in order to increase polymer adhesion in final products. Here, we show the effect of vacuum and air plasma functionalization on CF. X-ray photoelectron spectroscopy (XPS), Raman and FESEM investigation will highlight the difference between these two types of plasma treatments. The impact of these differences on the final products will be discussed.

### Biography

Mauro Giorcelli is a Researcher at the Department of Applied Science and Technologies (DISAT) at Politecnico di Torino. He has published over 50 articles in international journals, having around 500 citations. He is a Carbon Material Specialist; in particular In Composite Materials. Recently, he has started to work on the MODCOMP EU project (<http://modcomp-project.eu/>) supported by Horizon 2020, where the topic is engineered fibre-based materials for technical, high value and high performance products. His research interests include carbon materials, composite and biomaterials.

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