

International Conference on

MATERIALS SCIENCE & ENGINEERING

June 25-26, 2018 | Rome, Italy

Fibre functionalization by plasma treatment

Mauro Giorcelli, Pietro Mandracci, Alberto Tagliaferro
Polytechnic University of Turin, Italy

Carbon fibres (CFs) are well-known for their light weight, high strength, heat resistance, anticorrosion properties, and conductivity. Owing to these inherent properties, the combination of CFs with polymers has attracted the interest of many researchers. To develop high-strength composites fibers, it is important to design interfacial chemical bonds. Simultaneously seeking cost-effective production processes and final products is important. Different surface enhancing and modification techniques on CF based materials show different behaviour. Here we report a study of plasma functionalization of CFs in the framework of the EU MODCOMP project (contract 685844), aimed to develop novel fibre-based materials for technical, high value, high performance products for nonclothing applications. In particular, we show the effect of vacuum and air plasma functionalization on CF. 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.

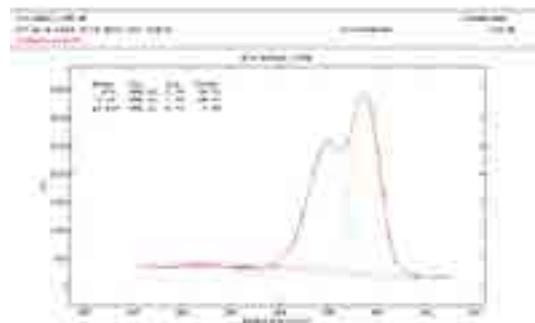


Fig. 1: Example of XPS characterization of C1s peak for carbon fiber before functionalization

Biography

Mauro Giorcelli holds a master in electronic engineering and a PhD in physics and is currently enrolled as a researcher at Department of Applied science and Technologies (DISAT) at Politecnico di Torino. He has published over 50 articles in international journals and those have received over 500 citations. He is a carbon material specialist, in particular in composites materials. Recently he has started to work also in the field of low cost carbon materials, in particular, carbon materials derived from biomass (Biochar). He has a widespread collaboration network in Europe, Asia and Canada for biochar applications.

mauro.giorcelli@polito.it

Notes: