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Carbon Fibre Reinforced Polymers Modified with PET-G/MWCNTs Nonwovens

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Abstract : Carbon fibre reinforced polymers (CFRPs) are characterized by very high strength and stiffness in relation to their weight. In addition, properties such as corrosion resistance and low thermal expansion allow them to replace traditional materials, i.e., wood or metals, in many industries such as aerospace, automotive, marine, and sports goods. However, CFRPs, have some disadvantages -they have relatively low electrical conductivity and break brittle, which significantly limits their application possibilities. Moreover, conventional CFRPs are usually manufactured based on thermosets, which makes them difficult to recycle. The solution to these drawbacks is the use of the innovative thermoplastic resin (ELIUM from ARKEMA) as a matrix of composites and the modification by introducing into their structure thermoplastic nonwovens based on PET-G with the addition of multi-wall carbon nanotubes (MWCNTs). The acrylic-carbon composites, which were produced by the infusion technique, were tested for mechanical, thermo-mechanical, and electrical properties, and the effect of modifications on their microstructure was studied. Acknowledgment: This study was carried out with funding from grant no. LIDER/46/0185/L-11/19/NCBR/2020, financed by The National Centre for Research and Development.
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