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EFFECTS OF UV-C EXPOSURE ON COMPOSITES MATERIALS MADE OF RECYCLED CARBON
FIBERS**Abstract**

Carbon fiber reinforced polymers are largely used for space applications since they combine outstanding mechanical performances with a low material density. However, composites components are produced from constituents with increasing scarcity and have large embedded carbon emissions associated with their production phase. Indeed, the fabrication of fibers is energy intensive and requires very high temperatures, high cost, and usually asks for fossil-fuel-derived precursor material. In addition to the negative environmental impact due to the manufacturing of raw materials, there are a serious problem related to the disposal of components fabricated by carbon/glass fiber composite materials. Therefore, the demand for efficient recycling strategies becomes necessary, driven by economic reasons and by legislation. The recycled fibers show different properties from the original ones, generally lower, due to the degrading actions of the current recycle methods. In this work, we investigated the potential application of recovered carbon fibers in satellite platforms, using fibers recycled in our laboratory with a sub-critical solvolysis method that we developed. The composite materials were exposed to UV-C irradiation and its effects were analyze in terms of structural performance, surface morphology and chemical modifications. The results were compared with those of composite materials made of virgin carbon fibers.