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UV radiations impact on the mechanical and physicochemical properties of polycarbonate

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Abstract : This work is devoted to the experimental study of UV irradiation on the mechanical and microstructural behaviour of polycarbonate (PC). Simple compression tests, X-ray, Scanning Electron microscopy (SEM) and an IRTF analysis were carried out in order to characterize the response of the specimens material after photodegration with a wavelength of 253 nm at room temperature and for several maintained durations of 72, 144 and 216 hours. These investigations showed a decrease of the intrinsic properties of polycarbonate (Young modulus, yield stress, etc.); the superposition of spectra IRTF shows that the intensity of chemical connections are influenced by the duration of UV irradiation; in addition, an increase of diffractogram peaks intensity of the samples after 216 hours of ageing has been noticed. Our objective in this work is to find correlations between the time of maintenance, microstructure and mechanical properties of our materials

Keywords : Amorphous polymer, Polycarbonate, UV irradiation, photodégradation