



STRUCTURE AND THERMAL/MECHANICAL PROPERTIES OF POLY (ϵ -CAPROLACTONE)-CLAY BLEND

SYNTHESIS AND CHARACTERIZATION OF EVA/CLAY FLEXIBLE FILMS TREATED BY ELECTRON BEAM RADIATION

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In the area of nanotechnology, polymer matrix based on nanocomposites have generated a significant amount of attention in the recent literature. The achieved results were at least initially viewed as unexpected (“nano-effect”) offering improved properties over that expected from thermal and mechanics predictions. This work presents the synthesis and characterization of EVA/Clay flexible films treated by electron beam radiation. EVA with 0.5 -3 wt.% of green Brazilian Clay addition were prepared by melt extrusion process, using a twin-screw extruder Haake Rheomex P332 with 16 mm and L/D = 25, from Thermo Scientific. Then, EVA/Clay nanocomposite was transformed into flexible films using a single-screw extruder with 25 mm diameter equipped with a flat die (laboratory line) and specimen test samples were obtained. Part of flexible film samples was submitted at electron beam radiation dose range 25-100 kGy using a 1.5 MeV electron beam accelerator, at room temperature in presence of air. The irradiated and non-irradiated samples were submitted to mechanical tests, XRD, UV-VIS, DSC, TG and FE-SEM analysis. The results showed significant changes in mechanical and thermal properties of EVA/CLAY flexible film due to clay addition and electron-beam irradiation. These results showed that it is possible to get interesting property in EVA flexible films by clay addition and electron-beam radiation treatment