

(Research Articles 7)

**Optical Properties and Spectroscopy of gamma irradiated Rosin /
Polycarbonate blends;**

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Blending of polymers is a useful technique to develop materials with enhanced properties better than those of the single polymer equivalents. The effect of blend concentration of Abietic acid (Rosin) on the optical properties and spectroscopy of Polycarbonates PC has been investigated. Ultraviolet–visible (UV–VIS) spectroscopy was applied to investigate the major process that is induced due to blend concentration. Moreover, using UV–vis spectroscopy, optical energy gap, Urbach energy, refractive index and color changes were evaluated. The results reveal that the Urbach energy increases with increasing the Rosin concentration up to 80% associated with a reduction in the optical energy gap that could be attributed to the morphological changes associated with an increase in disorder character. Also, the PC samples show color changes due to Rosin blends. Samples from the 50%Rosin/50%PC blend were irradiated with gamma at the dose range 20–300 kGy. The resultant effect of gamma radiation on the optical properties and spectroscopy of the blended samples has been investigated using UV and Fourier Transform Infrared FTIR spectroscopy. The results indicate that the gamma irradiation leads to the formation of shorter molecules as a result of degradation, which causes both a random breaking of bonds and the formation of stable molecules with a lower molecular weight. Also, the blended samples do not have a high resistance to degradation, and its tendency to crosslinking is low.