

THE EFFECTS OF RADIATION ON OPTICAL PROPERTIES OF DYED POLY (VINYL ALCOHOL) BLENDS

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ABSTRACT

The effects of gamma irradiation on the optical properties of dyed poly vinyl alcohol (PVA) films containing trichloroacetic acid (TCA) and acid-sensitive cresol-red dye have been studied. These polymers were exposed to different gamma doses in the range from 1 to 12 kGy. These polymer undergo color change from purple (color of base form) to yellow (color of acid form) upon exposure to gamma irradiation. The radiation-induced change in color was analyzed using UV-Vis spectrometer in the range 350 – 650 nm. The absorbances of polymer in the visible range have been studied in order to develop a dosimeter for gamma ray dosimetry. The absorption spectra produced two absorption bands, peaking at 575 nm for low doses and 438 nm for high doses. The dose-response was plotted by the change in absorbance as a function of absorbed dose. Results of the dose-response curves show the absorption decreases and increases exponentially at bands 575 nm and 438 nm respectively.

<http://journal.masshp.net/wp-content/uploads/Journal/2004/E.B.%20Saion%20192-198.pdf>

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