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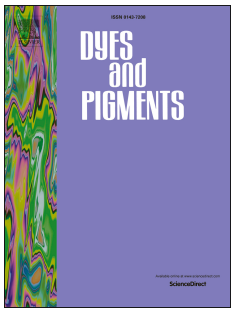

Low-dose film dosimeter based on mixture of TBPE and AY dyed poly(vinyl alcohol)

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Low-dose film dosimeter based on mixture of TBPE and AY dyed poly(vinyl alcohol)

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Abstract

A new advanced combined Dyed poly(vinyl alcohol) (PVA) film exhibit a new promise dosimeter. It could be established with the aid of casting aqueous solutions of PVA containing mixture of Tetrabromo phenolphthalein ethyl ester dye (TBPE), Acid yellow (AY) and chloral hydrate ($CCl_3CH(OH)_2$, (CH) on a horizontal glass plate. It may be considered to be used as recurring low–dose label dosimeters. This bendy thin plastic movie trade its shade undergoes two steps; first from green to yellow, then to red on exposure to γ-ray photons because of the ensuing reducing of pH because of HCl generated from the radiolysis of chloral hydrate. The results indicate that the beneficial dose range from 0.1 to 5 kGy. Effect of various chloral hydrate concentrations on response of the movie became investigated. Dosimetric studies of the film are studied, which shows wonderful stability before and after irradiation (at dark and mild) beside the impact of relative humidity.

Key words: dye; Tetrabromo phenolphthalein ethyl ester; Acid yellow; PVA; Gamma ray; dosimeter.