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Effect of Gamma Radiation on the Physico-Mechanical Properties of Gelatin-Based Films and Jute-Reinforced Polymer Composites

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Gelatin, a natural protein, is insoluble in water and is solubilized by hydrolysis. Gelatin based polymeric films were prepared in aqueous medium by casting. The mechanical properties were evaluated by proper method. The tensile strength was found to be 27MPa. Gelatin films were soaked in different formulations containing 2-hydroxyethylmethacrylate (HEMA), methanol and photo-initiator and then irradiated under gamma radiation. Again, a series of gelatin solutions was prepared by blending varying percentages (10–50% by wt) of HEMA and then films were prepared and irradiated under gamma radiation. It was found that tensile properties of gelatin films improved significantly. In another investigation, jute fiber reinforced polypropylene (PP) composites were prepared by compression molding. Composites were fabricated with varying percentages of jute and irradiation dose. Total radiation dose varied from 250-1000 krad and composites made of using 500 krad showed the best results.

Key words: 2-Hydroxyethylmethacrylate; Gamma radiation; Gelatin; Grafting; Polymer matrix composites (PMCs), Surface treatment

Country/Organization invited to participate

Bangladesh

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