

Frequency dependence of dielectric properties of beam irradiated *luffa* fiber composites

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Abstract. In this present inspection, the dielectric properties of biodegradable composites are studied using biodegradable polymer poly (lactic) acid (PLA) and natural fiber of *luffa cylindrica* (LC) fabricated using injection molding technique. Before reinforcement in PLA matrix, LC fibers were irradiated with 6 MV gamma rays generated from medical LINAC at room temperature 26°C in presence of air. The effects of irradiation dose and wt of fiber in composites on electrical properties such as dielectric constant and dielectric loss factor were investigated at room temperature 30°C with variation in frequency from 100Hz to 1MHz. The incorporation of irradiated LC fiber in the PLA matrix increases the dielectric constant, dielectric loss of the composites compared to virgin PLA matrix. Dielectric constant and dielectric loss factor of all the composite samples decreased with increase in frequency.

Keywords. LINAC, gamma irradiation, dielectric constant, dielectric loss

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