

P66. IRRADIATION INFLUENCE ON THE PROPERTIES OF HMS-POLYPROPYLENE CLAY/AGNPS COMPOUND MASTERBATCHES

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HMS-Polypropylene-clay-silver nanocomposites were manufactured using twin-screw extruders. Processing conditions, namely screw speed and feed rate, are known to strongly influence the final dispersion levels attained. The polypropylene modified by gamma irradiation in acetylene at 12.5 kGy dose, also known as high-melt-strength-polypropylene (HMSPP), was mixed with montmorillonite (MMT) clay and silver nanoparticles (AgNPs) [1]. Those materials were prepared by a melt mixing masterbatch process via twin screw extrusion with a wide range of processing conditions [2]. The masterbatch were irradiated in inert atmosphere at 1.0; 3.0; 5.0; 10.0, 50.0 kGy dose and evaluated by Differential Scanning Calorimetry (DSC), X-Ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDX) and determination of antibacterial activity. The results indicate the formation of microstructures predominantly exfoliated of HMSPP nanocomposite. Further, the antibacterial properties of the hybrid polymer were investigated against *Escherichia coli* (Gram-negative) and *Staphylococcus aureus* (Gram-positive) bacteria.

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References

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