

POLYPROPYLENE AND NANOSILVER HYBRID FILMS OBTAINED IN MOLTEN STATE WITH ANTIBACTERIAL ACTIVITY

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ABSTRACT

This paper presents a study of films based on blends of polypropylene (PP) with radiation modified PP and insertion of silver nanoparticles aiming bactericide effect. The use of silver (Ag) gives important antibacterial properties owing to its high toxicity for bacteria.

The blend of 50/50 of PP/irradiated PP was processed in a twin screw extruder. Five PP-Nanocomposites AgNPs were processed in different concentrations of 0.25; 0.5; 1.0; 2.0 and 4.0% in wt%. The material was characterized by scanning electron microscopy (SEM), energy dispersive spectroscopy (EDS), transmission electron microscopy (TEM), cytotoxicity assay and Kirby-Bauer disk diffusion susceptibility test. The films showed agglomeration of silver nanoparticles and regions with homogeneous distribution of the nanoparticles. The interactions of the nanosilver with *Pseudomonas aeruginosa* (*P.aeruginosa*) and *Staphylococcus aureus* (*S. aureus*) were assessed as bactericidal effect.

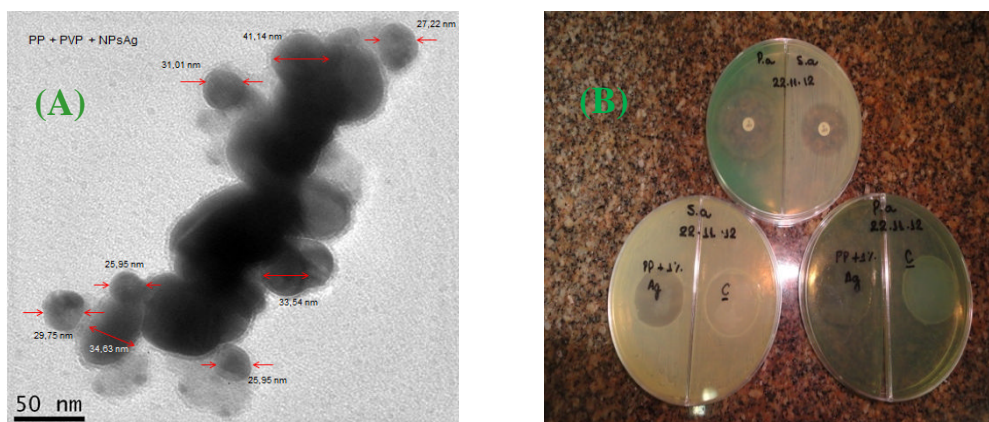


Fig. 1: TEM of polypropylene film with Ag nanoparticles (A) and Kirby-Bauer disk diffusion susceptibility test (B)

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