



Contribution ID: 48

Type: Poster

Development of active films based on poly (butylene adipate-co-terephthalate) filled with silver-montmorillonite nanoparticles for food packaging use.

Active films made of poly (butylene adipate-co-terephthalate) and a small amount of silver exchanged montmorillonite (2, 3 and 5% by weight) for food packaging use were successfully prepared via solvent casting method. PBAT/AgMMT nanocomposites containing different AgMMT loadings were characterized by several techniques. X-Ray Diffraction, UV-visible Spectroscopy and Transmission Electron Microscopy results revealed the formation of exfoliated nanocomposites structures with a random dispersion of spherical Ag nanoparticles. These nanocomposites films have showed an interesting improvement in their barrier properties and a strong antibacterial efficiency against *S.aureus* and *E.coli* bacteria. The potential of the silver ion release from the PBAT/AgMMT films to a slightly acidified aqueous medium was measured by Atomic Absorption Spectroscopy. The results exhibited a gradual increase of the amount of silver ions released up to 30 days of immersion. The kinetic study of the ions release showed that the release's mechanism is governed by the diffusion process.

Keywords: Active packaging, antimicrobial activity, nanocomposites, silver ions release.

Preferred topic

Industrial applications

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