INVESTIGATION ON ZnO RELEASE FROM PBAT/ZNO NANOCOMPOSITE FILMS AND THEIR ANTIMICROBIAL PERFORMANCE

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Abstract

Long-term antibacterial PBAT-ZnO nanobiocomposite films were properly designed via solvent casting method. X-Ray Diffraction, Scanning Electron Microscopy and UV-visible Spectroscopy results confirmed the formation of spherical ZnO nanoparticles randomly dispersed within PBAT matrix. PBAT-ZnO films demonstrated a significant improvement of their antimicrobial and barrier performances. The potential of the biocidal Zn^{2+} ions release from the PBAT/ZnO nanocomposites films was measured by Atomic Absorption Spectroscopy. The results exhibited a gradual increase of the amount of Zn^{2+} ions released. The kinetic study of the release showed that the release's mechanism was governed by the combination between three phenomena: dissolution, diffusion and hydrolytic degradation.