

عنوان مقاله:

Biopolymer Nanocomposites with Enhanced Photocatalytic Antimicrobial Activity and Barrier Properties Based on LDPE- nano TiO₂/Organoclay Hybrid

محل انتشار:

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خلاصه مقاله:

In the present work a novel bio-nanocomposite polymeric material with enhanced photocatalytic antimicrobial activity and barrier properties has been designed and prepared via melt blending of low density polyethylene (LDPE) and hybridized system comprised of nano TiO₂ and organoclay. The synergistic effects of silicate nano platelets upon the photoactivity of nanocomposite surface in killing E.coli and S.aureus bacteria have been investigated. Surface morphology of samples were studied by conducting surface tension measurements and Field-Emission (SEM), energy-dispersive-X ray analysis (EDXA), small angle X-ray diffractometry (SAXS) on the surface of samples. Linear melt-viscoelastic characterization exhibited improved dispersion for the both nanoparticles and enhanced barrier properties in interfacially compatibilized nanocomposite samples. Film blown nanocomposite based on TiO₂/Clay hybrid system showed more potential for photo inactivation of E.coli bacteria under UV light irradiation as well as most .reduced permeability compared to other samples

کلمات کلیدی:

Antimicrobial, Bacteria, Nano TiO₂, Organoclay, Hybrid, Synergistic Effect, Permeability, Barrier properties

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