

Morphology and Gas Barrier Property of Poly(propylene carbonate)-based Hybrids Prepared by Sol-Gel Method

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Recently, the poly(propylene carbonate) (PPC) derived from carbon dioxide and propylene oxide has drawn considerable interests in packaging film industry due to its eco-friendly biodegradability as well as good gas barrier property. In this study, for the application of gas barrier packaging films, we prepared organic-inorganic PPC/silica hybrid coating materials by employing sol-gel method. Subsequently, the prepared hybrids was coated onto various polymeric films such as BOPP, PET, PLA films. The bulk and surface morphology were observed by SEM and AFM to evaluate the phase compatibility in the PPC/silica hybrids. We also investigated the oxygen barrier properties and optical transparencies of the films coated by the hybrids with various silica loadings in terms of measurement of oxygen transmission rate and visible light transmittance. Finally, we will present the feasibility of application of PPC-based hybrid technology to the practical gas barrier packaging films.