Morphology and barrier property of EVOH-based ternary nanocomposite using graphene nanosheets and silica particles

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The ethylene-vinyl alcohol copolymer (EVOH) has been widely used in packaging application due to its excellent gas barrier performance and its fairly good transparency. For the application of barrier thin layer deposited on BOPP film, in this study, the preparation of EVOH-based nanocomposite coating materials based on graphene nanosheets and silica particles was attempted via solution blending and sol-gel method. The transparent ternary graphene/silica/EVOH nanocomposite coating layer with a thickness of ~4㎛ on BOPP substrate could be obtained. We investigated the effect of level of graphene loading and SiO_2 on the resulting morphology, optical transparency, thermal (crystallization behavior) and barrier properties of the prepared nanocomposite films.