

Preparation and characterization of eco-friendly poly(propylene carbonate)-based nanocomposites incorporated with modified graphene nanosheets

오혁균, 김성우[†]

경기대학교

(wookim@kyonggi.ac.kr[†])

Poly(propylene carbonate) (PPC) has drawn substantial interests in environmental researcher and industry due to its eco-friendly synthesis procedure. However, poor thermal and mechanical properties of PPC limit its application. Therefore, much efforts have been dedicated to the incorporation of nanofiller to overcome such drawbacks of PPC. In this study, for the improvement of thermal, mechanical and barrier properties of PPC, we used two types of graphene nanosheets, which were derived from microwave irradiated expansion followed by surface modification. The modified graphene nanosheets were incorporated into PPC via solution blending assisted by sonication, subsequently the nanocomposite film was prepared by casting process. We evaluated the degree of exfoliation and dispersion of the nanocomposites using XRD and TEM observation. The reinforcing effects arising from incorporation of graphene nanosheets into PPC were explored by examining the thermal, mechanical and barrier properties of resultant nanocomposite films with various graphene loadings.