

Preparation of Biodegradable Polymer Composite Film Based on Kenaf

김과도, 김성곤[†]
전북대학교
(skkim@jbnu.ac.kr[†])

Biodegradable polymers can solve environmental pollution which is the problem of petroleum-based polymers. Poly(L-lactide) (PLA) is synthesized by the polymerization of L-lactide which is produced by the pretreatment of Kenaf. Other main components, cellulose and lignin, are also blended with PLA to make the composite film. The remaining hemicellulose is utilized to produce C5 chemicals such as pentanediol. As such, the process in this study is particularly important because it can produce biomass-derived chemicals without the loss of any components of biomass. For biodegradable composite, cellulose and lignin at the ratio extracted from Kenaf are added to PLA. The contents of the additives are 5, 10, 20, and 30 wt% to form the biodegradable polymer composites. It is confirmed that the elongation of the composite film increased as the amount of additives increases. The hydrolysis test of the composite film is also carried out. In addition, the polymer composite film has antioxidant properties due to the phenol group of lignin. The composite film in this way can be used as mulching films or food packaging materials.