# Enhanced electrical properties of poly(lactic acid)/carbon black composites by incorporation of poly(caprolactone)

김지환, 홍정숙, 안경현†
서울대학교
(ahnnet@snu.ac.kr†)

Particle networks induced by the addition of 2nd polymer fabricated in poly(lactic acid)/poly(caprolactone)/carbon black ternary composites was investigated through their morphology, electrical and rheological properties to examine how selective localization of particles affects the morphology development in polymer blends. For this purpose, a wide concentration of poly(caprolactone) (PCL) was incorporated into the poly(lactic acid) (PLA) composite containing 4 wt% carbon black (CB).
electrical property measurement indicated that when PCL was added into the PLA and CB binary composite, the conductivity of a blend became several orders of magnitude higher than that of the composite without PCL. SEM images of blends revealed that added PCL was located among CB aggregates due to thermodynamic affinity between CB and PCL, and bridged them each other, which led to the formation of CB networks. From dynamic linear viscoelastic tests and examination of percolation behavior, networks fabricated in the ternary composite was found to be more advantageous structure to mobility of PLA chains than that in the binary composites.