

Characteristics of epoxy nanocomposites with amine-functionalized graphenes

김대수*, 박솔몬

충북대학교

(dskim@chungbuk.ac.kr*)

Graphenes offer high mechanical and electrical properties when they are used as fillers in polymer nanocomposites. In this study, graphenes were prepared by a chemical method. To develop mechanically efficient polymer nanocomposites reinforced by graphenes, adequate dispersion of the fillers and strong interfacial bonding between the fillers and the polymer matrix are essential. The purpose of this study is to examine the influence of introducing amine groups on the surfaces of graphenes. FT-IR spectroscopy, TGA and SEM were used to confirm the functionalization. Epoxy nanocomposites comprising the graphenes were prepared and their characteristics were investigated by DSC, DMA and TMA. Fracture surfaces of the nanocomposites were investigated by SEM. The functionalization induced strong interfacial bonding resulting in considerable improvements in the performance of the nanocomposites.