

PTC Behaviors of Ozonized Carbon Nanotubes/HDPE Matrix Composites

석수자*, 박수진
한국화학연구원
(kindness@kriect.re.kr*)

In this work, the carbon nanotubes (CNTs) were ozonized to increase the positive temperature coefficient (PTC) intensity of CNTs-filled HDPE conductive composites. The changes in surface properties of ozonized CNTs were investigated with FT-IR and EA measurements. Electrical resistivities of the CNTs/HDPE composites were measured by using a digital multimeter. As experimental results, it was found that the oxygen containing functional groups of the CNT surfaces, such as O-H, C-O, and C=O were increased with the ozonization. The resistivity of the composites was increased abruptly near the crystalline melting temperature of the HDPE, which could be attributed to the thermal expansion of HDPE matrix. Consequently, the ozone treatment of CNTs led to an increase of PTC intensity in CNTs/HDPE composites, which was probably due to the growing of maximum volume resistivity of the composites.