熔融混煉偏二氯乙烯-氯乙烯共聚體/黏土奈米複材之製備及其特性之研究

英文摘要

Poly (vinylidene chloride-co-vinyl chloride, PVDCB)/clay nanocomposites were prepared by melt blending of the polymer with a fluorinated synthetic mica (MEE), in the presence of dioctyl phthalate (DOP) which acted as a plasticizer. The nanostructure of the PVDCB/MEE nanocomposites was characterized by a wide angle X-ray diffractometer (WAXD) and a transmission electron microscope (TEM). It was found that both intercalated and exfoliated structures were present in the PVDCB/MEE nanocomposities. Below 8 wt% MEE, the intercalation effect of PVDCB/MEE nanocomposites decreased with MEE. The thermal stability of PVDCB/MEE nanocomposites was evaluated by a thermogravimetric analyzer (TGA). Results showed that, in nitrogen, PVDCB/MEE nanocomposites demonstrated a one-step thermal degradation behavior, and its thermal stability was significantly related to the morphology of nanocomposites, the DOP content and the degraded PVDC structure. In Air, PVDCB/MEE nanocomposites presented a two-step thermal degradation behavior. The flammability of PVDCB/MEE nanocomposites reduced as the amount of MEE increased. Below 5 wt% MEE, the glass transition temperature (Tg) of PVDCB/MEE nanocomposites increased with MEE. The crystallization temperature (Tc) of PVDCB showed a higher value in PVDCB/MEE nanocomposites and it can be related to the presence of DOP. Water vapor /oxygen barrier properties of PVDCB/MEE nanocomposites were evaluated by water vapor permeability tester and gas permeability tester, respectively. Results showed that water vapor /oxygen barrier properties were significantly improved in PVDCB/MEE nanocomposites and they can be related to the morphology of nanocomposites, the DOP content and the

crystallinity of PVDCB.