

# 偏二氯乙烯-丙烯酸甲酯共聚體/黏土奈米複材的合成及其特性之研究

## 英文摘要

Poly (vinylidene chloride-co-methyl acrylate, VDC-MA copolymer)/ clay nanocomposites were prepared by in-situ emulsion polymerization with a fluorinated synthetic mica (MEE). Below 5 wt% MEE, it was found that apparent exfoliated structures were present in the VDC-MA copolymer/MEE nanocomposites. In nitrogen or air stream, VDC-MA copolymer/MEE nanocomposites exhibited a multi-steps thermal degradation behavior, and these degradation mechanism were significantly related to the morphology of nanocomposites and VDC content. In nitrogen, the initial crosslinking temperature of VDC-MA copolymer/MEE nanocomposites decreased with VDC and MEE contents, higher char yield of the resulting nanocomposites were obtained. In air, the thermal oxidation reaction temperature of VDC-MA copolymer/MEE nanocomposites increased as the amount of MEE increased, and its thermal stability was hence improved. The melting point ( $T_m$ ) of crystalline nanocomposites decreased with MEE contents, the crystallization and the melting behavior were significantly related to the morphologies of nanocomposites and VDC content, whereas the glass temperature ( $T_g$ ) of nanocomposites was independence of the morphology of nanocomposites. At low temperature, VDC-MA copolymer/MEE nanocomposites showed a higher storage modulus and it increased irregularly with VDC and MEE contents. Water vapor/oxygen barrier properties were significantly improved in VDC-MA copolymer/MEE nanocomposites.