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ABSTRACT

The water vapor and gas permeability of mixed matrix membranes (MMMs) composed by multiwalled carbon nanotubes (MWCNTs) dispersed in isotactic polypropylene (i-PP) was examined. The agglomeration state of the anisotropic filler nanoparticles was monitored by Raman spectroscopy and optical/electron microscopy in samples with different filler concentration and filler-matrix compatibility. The water vapor permeability of the MWCNT-MMM increases with the filler content up to a critical concentration. At larger MWCNT concentrations the composite membranes becomes water impermeable: filler aggregates or/and labyrinth-type networks form and act as traps for migrating water. Using

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