

Abstract

Polymeric blend ultrafiltration membranes based on poly(vinyl chloride) (PVC) and polystyrene (PSR) were prepared by phase inversion method. The PSR concentration in dope solution varied from 1 to 6 wt.%. DMAC was used as a solvent, while water was used as internal and external coagulant. Scanning electron microscope (SEM) was utilized to characterize cross-section, outer, and inner surfaces of the hollow fiber structure. Differential scanning calorimetry (DSC) was used for the determination of the glass transition temperature (T_g) of the blends. From the experimental results it was found that, the structural morphology of the polymeric blend varied with the PSR concentration. There is no significant decrease in pure water permeation flux by using 1 and 2 wt.% PSR concentration in dope solution. The PVP K-90 rejection highly improved from 76.2% to 98.53% with the addition of 1 wt.% PSR concentration. The PVC/PSR blends show incompatibility by the results of SEM and DSC. Also it was found that the mechanical properties of PVC/PSR blend membranes were improved randomly compared with that of PVC membrane.