

## Abstract

Polysulfone (PSF) hollow fiber membranes were spun by phase-inversion method from 29 wt % solids of 29 : 65 : 6 PSF/NMP/glycerol and 29 : 64 : 7 PSF/DMAc/ glycol using 93.5 : 6.5 NMP/water and 94.5 : 5.5 DMAc/ water as bore fluids, respectively, while the external coagu-lant was water. Polyvinyl alcohol/polysulfone (PVA/PSF) hollow fiber composite membranes were prepared after PSF hollow fiber membranes were coated using different PVA aqueous solutions, which were composed of PVA, fatty alcohol polyoxyethylene ether (AEO9), maleic acid (MAC), and water. Two coating methods (dip coating and vacuum coating) and different heat treatments were discussed. The effects of hollow fiber membrane treatment methods, mem-brane structures, ethanol solution temperatures, and MAC/ PVA ratios on the pervaporation performance of 95 wt % ethanol/water solution were studied. Using the vacuum-coating method, the suitable MAC/PVA ratio was 0.3 for the preparation of PVA/PSF hollow fiber composite membrane with the sponge-like membrane structure. Its pervaporation performance was as follows: separation factor ( $\alpha$ ) was 185 while permeation flux ( $J$ ) was 30g/m<sup>2</sup>h at 50°C. Based on the experimental results, it was found that separation factor of PVA/PSF composite membrane with single finger-void membrane structure was higher than that with the sponge-like membrane structure. Therefore, single finger-void membrane structure as the supported membrane was more suitable than sponge-like membrane structure for the preparation of PVA/PSF hollow fiber composite membrane