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Effect of solvent evaporation and coagulation on morphology development of asymmetric membranes NEELAKANDAN CHANDRASEKARAN, THEIN KYU, The University of Akron — Miscibility behavior of blends of amorphous polyamide (PA) and polyvinylpyrrolidone (PVP) was studied in relation to membrane formation. Dimethylsulfoxide (DMSO) and water were used as solvent and non-solvent, respectively. Differential scanning calorimetry and cloud point measurements revealed that the binary PA/PVP blends as well as the ternary PA/PVP/DMSO system were completely miscible at all compositions. However, the addition of non-solvent (water) to this ternary system has led to phase separation. Visual turbidity study was used to establish a ternary liquid-liquid phase diagram of the PA-PVP/DMSO/water system. Scanning Electron Microscopy (SEM) showed the development of finger-like and sponge-like cross sectional morphologies during coagulation. Effects of polymer concentration, PA/PVP blend ratio, solvent/non-solvent quality, and evaporation time on the resulting membrane morphology will be discussed.

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