

## Abstract

Poly(imide) (PI) hollow fiber membranes were prepared by using classical phase inversion process. Effects of different external coagulation bath temperatures (ECBT) and various bore flow rates (BFR) on the morphology and separation performance of the membranes were studied. Cross-section, inner and outer structures were characterized by using scanning electron microscope and atomic force microscopy (AFM). Mean pore size, pore size distribution, and mean roughness of the PI hollow fibers surfaces were estimated by AFM. It was found that the hollow fibers morphology composed of sponge-like and finger-like structures with different ECBT and BFR. A circular shape of the nodules with different sizes was observed in the outer surface of the PI hollow fibers. Mean pore size of the outer surface increases with increasing ECBT and BFR. The important result observed in this study is that the ECBT clearly has the largest effect on hollow fiber PI membrane roughness compared with the BFR. Pure water permeability of the PI hollow fibers was improved with increase of ECBT and BFR. The solute rejection (R%) was reduced when the ECBT and BFR was increased.