



## Enhanced separation performance of PVDF/PAN blend membrane based on PVP tuning

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Received 12 July 2014; Accepted 4 May 2015

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### ABSTRACT

Ultrafiltration (UF) membranes were prepared from blends of poly(vinylidene fluoride) (PVDF)/polyacrylonitrile (PAN) via phase inversion method induced by immersion precipitation. Polyvinylpyrrolidone (PVP) was used as pore former and hydrophilic polymeric additive. N,N-dimethylacetamide (DMAc) and water were used as solvent and coagulant (non-solvent), respectively. The effect of different concentrations of PVP on the morphology and performance of the prepared membranes was investigated. Performance of the membranes was evaluated based on pure water flux and filtration of buffered bovine serum albumin (BSA) solution. The contact angle measurements indicated that the hydrophilicity of PVDF/PAN membranes improved by increasing the PVP concentration in the casting solution. However, such improvement was limited to PVP concentration of the casting solution up to 4 (wt.%) and then decreased by further addition of PVP. According to the obtained results, the rejection of BSA decreased with increase in the PVP concentration in the casting solution. The morphology of the prepared membranes was studied by scanning electron microscopy.

*Keywords:* Polymeric blend membrane; PVDF/PAN; Phase inversion; PVP; Separation performance

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