

Reverse Osmosis Membrane

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Recently, reverse osmosis (RO) process has attracted significant research as an effective method of seawater purification. Over the last decades, a large number of RO membranes have been developed from different materials. To improve water permeability and chlorine resistance, the chemical modification of the active top layer by the introduction of sulfonic acid or carboxylic acid groups have been employed. In this study, new membrane materials based on sulfonated poly(arylene ether sulfone) (aPES) containing pendant amino groups were developed.

Monomer, 3,3'-disulfonated-4,4'-dichlorodiphenylsulfone (SDCDPS) is obtained from 4,4'-dichlorodiphenylsulfone (DCDPS). M-aminophenol was obtained from Aldrich. The aPES was synthesized via nucleophilic aromatic substitution. The polysulfone (PS) ultrafiltration support membrane was obtained from Trisep corp. and the active layer of the RO membrane was prepared by interfacial polymerization (IP) process.

The membrane fabricated with aPES was compared with typical PA TFC membrane which was prepared by IP reaction with trimesoyl chloride (TMC) and m-phenylenediamine (MPDA) on a PS support membrane.