

Thin film composite reverse osmosis desalination membrane with sulfonated poly(arylene ether sulfone) containing amino groups

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Recently, reverse osmosis (RO) desalination has attracted significant research topic as an effective technique of seawater purification. Unfortunately, the commercial polyamide (PA) thin film composite (TFC) membranes show low water permeability and low chlorine resistance. To improve water permeability and chlorine resistance of commercial RO membrane, the chemical modification of the active layer by the introduction of hydrophilic functional groups have been employed. In this study, new membrane materials based on sulfonated poly(arylene ether sulfone) (SDADPS) containing pendant amino groups were developed.

SDADPS was synthesized via step polymerization. TFC membranes were prepared using an interfacial polymerization (IP) technique. RO performances were measured using cross-flow cell instrument at 55 bar using a 32,000 ppm NaCl solution. The chlorine resistance was evaluated using sodium hypochlorite solution.

The salt rejection and water permeability of the SDADPS membrane prepared reached 96 % and 30 L/m²h, respectively.