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Water and salt transport properties of disulfonated poly(arylene ether sulfone) desalination membranes formed by solvent-free melt extrusion

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ABSTRACT

This paper reports water and salt transport properties of sulfonated polysulfone desalination membranes prepared by solvent-free, melt extrusion. The 20 mol% disulfonated poly(arylene ether sulfone) (BPS-20K) membranes were prepared by melt processing, using poly(ethylene glycol) (PEG) \bar{M}_n (200 ~ 400 g/mol) as plasticizers at concentrations of 20 wt% to 30 wt%, and different PEG extraction temperatures. Water and salt transport properties of BPS-20K membranes prepared by different processing routes correlated well with water uptake, as expected, based on free volume theory. The melt-extruded BPS-20K membranes show higher water uptake than those of solution cast

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