

The Preparation and Characteristics of Polystyrene based on Anion Exchange membranes using Different side-chain Lengths of Poly(ethylene glycol)methyl ether methacrylate

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While commercial polystyrene-based ion exchange membranes have simple manufacturing processes, they also possess the poor durability due to their brittleness. Poly(ethylene glycol)methyl ether methacrylate(PEGMA) with hydrophilic side chain of poly(ethylene glycol)(PEG) was used as a co-monomer to make the membranes have improved flexibility. Hydrophilicity/hydrophobicity of the anion exchange membrane was able to be adjusted by varying the chain lengths of the PEG. For the preparation of the anion exchange membranes, a porous PE substrate was immersed into monomer solutions and thermally polymerized. The prepared membranes were then subsequently post-aminated using trimethylamine(TMA). The prepared pore-filled anion exchange membranes were evaluated in terms of ion exchange capacity(IEC), electric resistance and water uptake.