

Polyaniline modified poly(styrene sulfonic acid)-grafted poly(vinylidene fluoride) cation exchange membrane for the electro dialysis application

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The present study reports the development of cation exchange membranes (CEMs) based on poly(styrene sulfonic acid) (PASA) and poly(vinylidene fluoride) (PVDF), produced by in situ free radical polymerization of sodium 4-styrenesulfonate. CEMs were fabricated by solution casting technique followed by conversion of the ensuing membranes into the acidic form. CEMs were chemically modified by in situ polymerization of aniline in acidic medium using $(\text{NH}_4)_2\text{S}_2\text{O}_8$ as an oxidizing agent. Numerous physicochemical and electrochemical characterization techniques were used to deliberate the structure, morphology, water uptake, ion exchange capacity and chemical stability of the membranes. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science, ICT and future Planning (2015R1A2A1A15055407) and Ministry of Education (2009-0093816).