

Supplementary Material

Side Chain Piperidinium Functionalized AEMs with an Ethylene Oxide Spacer for Improving Ion Conductivity and Alkaline Stability

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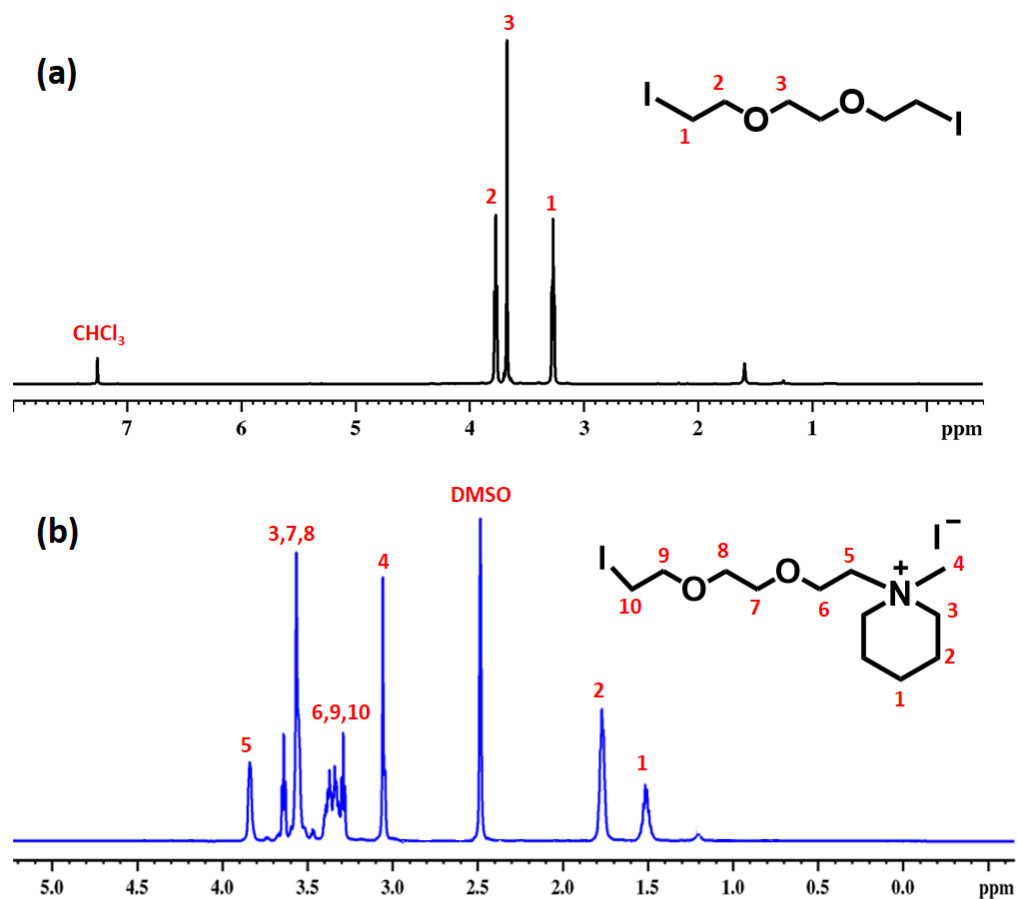


Figure S1. ^1H NMR spectra of (a) 1, 2-bis (2-iodoethoxy)ethane and (b) 1-(2-(2-(2-iodoethoxy)ethoxy)ethyl)- methylpiperidinium iodide (I-OPip).

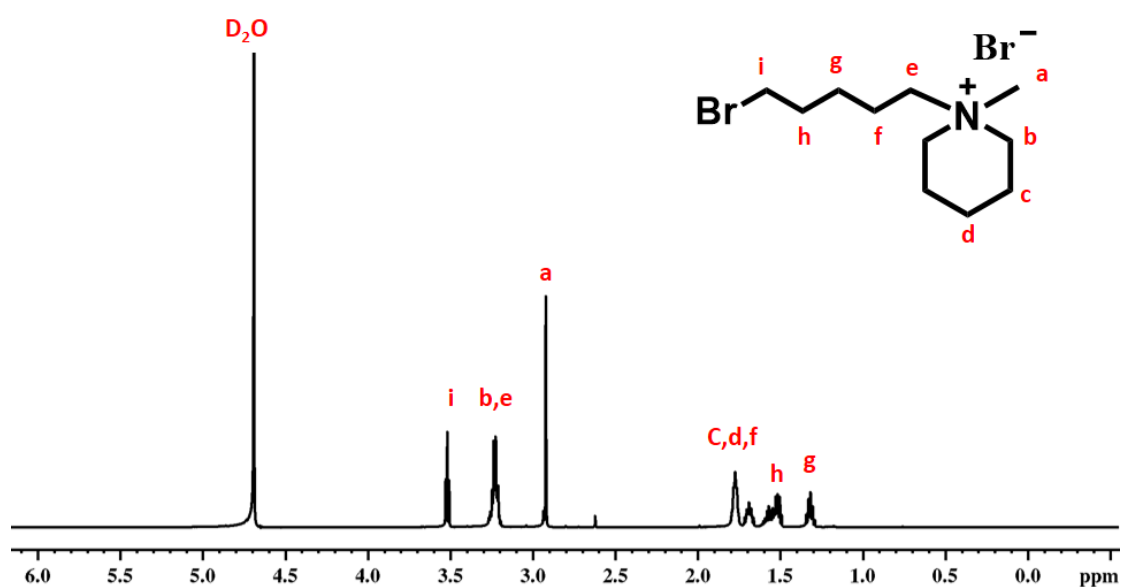


Figure S2. ^1H NMR spectra of Br-Pip.

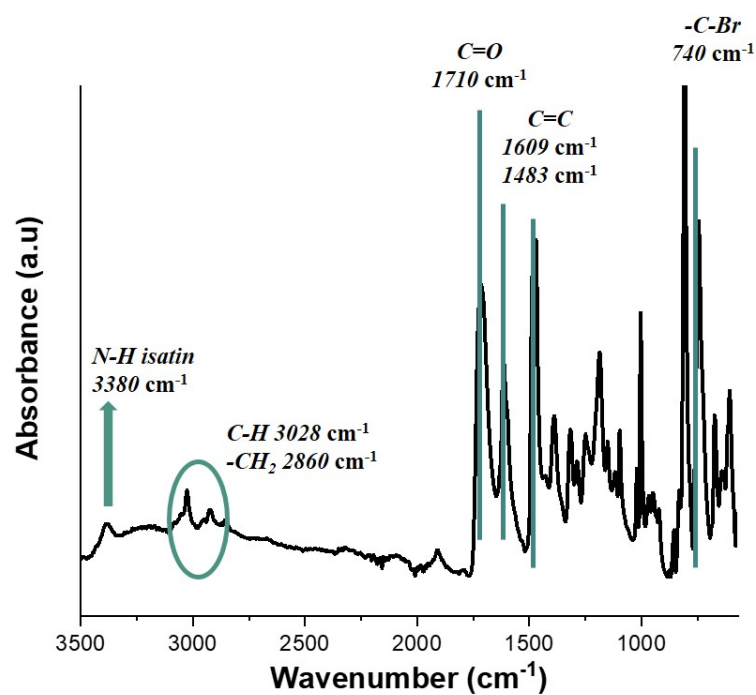


Figure S3. ATR-FTIR spectrum of the P(OpT80-dBrac) copolymer.

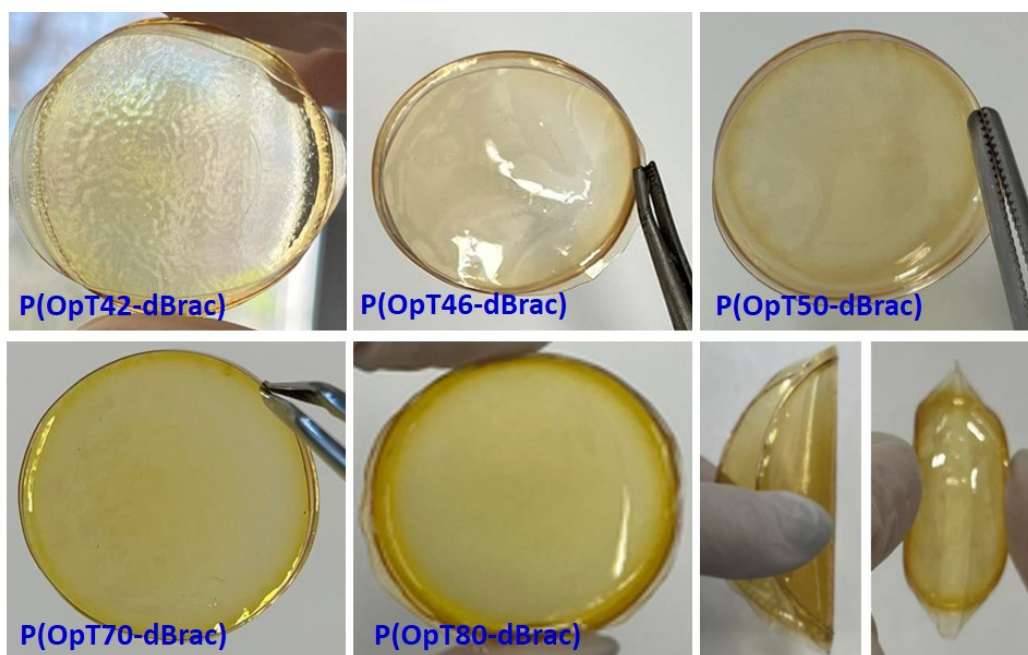


Figure S4. Photographs of synthesized P(OpTx-dBrac) copolymers.

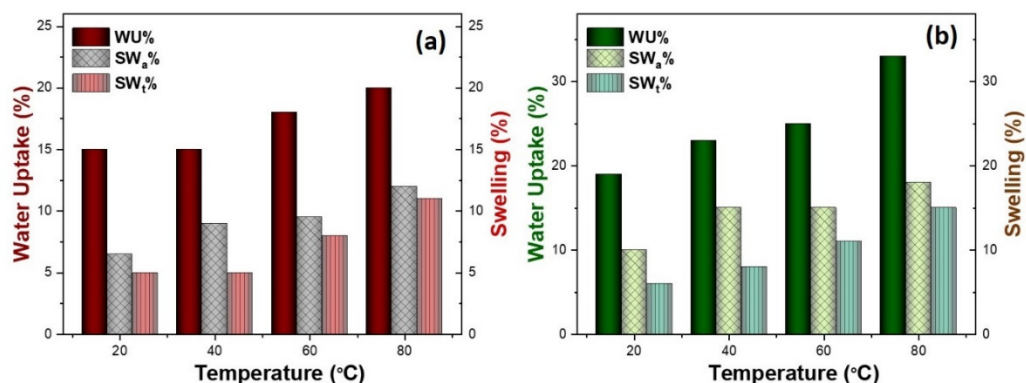


Figure S5. Water uptake and swelling behavior of (a) P(OpT70-dBrac)-Pip and (b) P(OpT70-dBrac)-OPip in the OH⁻ form as a function of temperature.

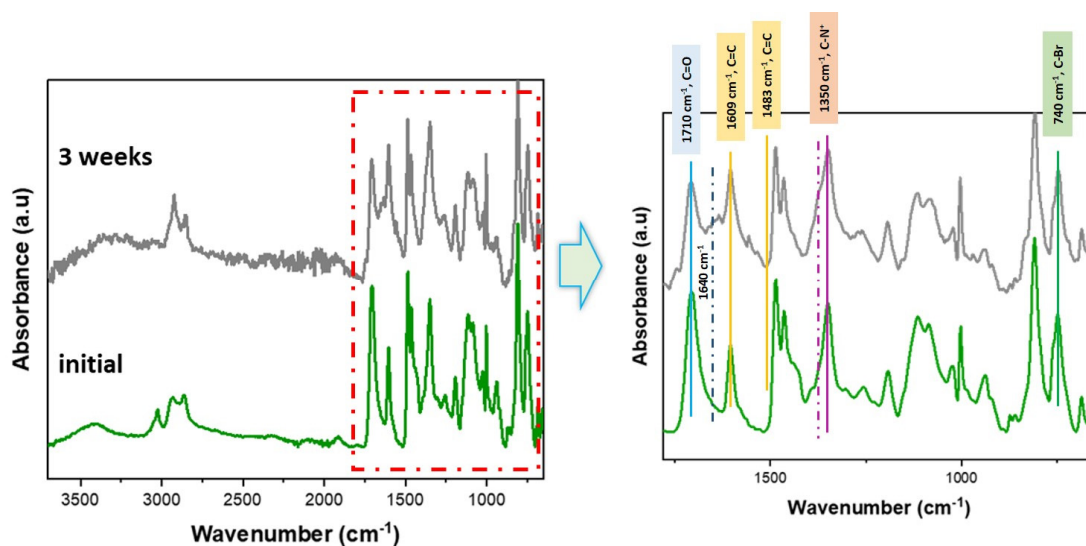


Figure S6. ATR spectra of the untreated P(OpT70-dBrac)-OPip membrane and the corresponding membrane after alkaline aging for 3 weeks in 2M KOH solution at 80 °C in the whole spectral region (3700-650 cm⁻¹) and in the magnified region from 1800 to 625 cm⁻¹.

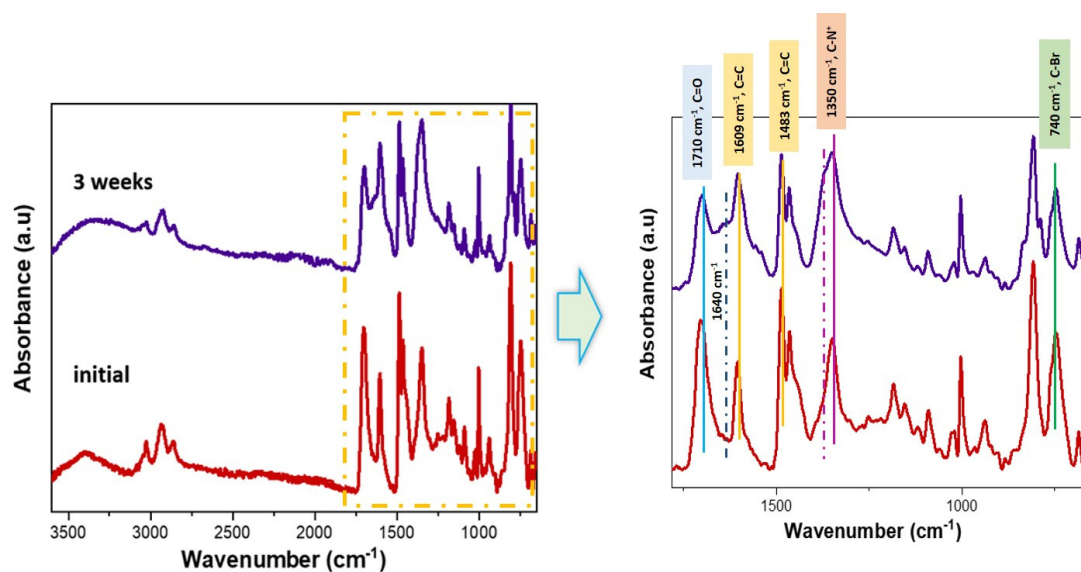


Figure S7. ATR spectra of the untreated P(Opt70-dBrac)-Pip membrane and the corresponding membrane after alkaline aging for 3 weeks in 2M KOH solution at 80 °C in the whole spectral region (3700-650 cm^{-1}) and in the magnified region from 1800 to 625 cm^{-1} .