Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Anion-exchange membranes with polycationic alkyl side chains attached via spacer units

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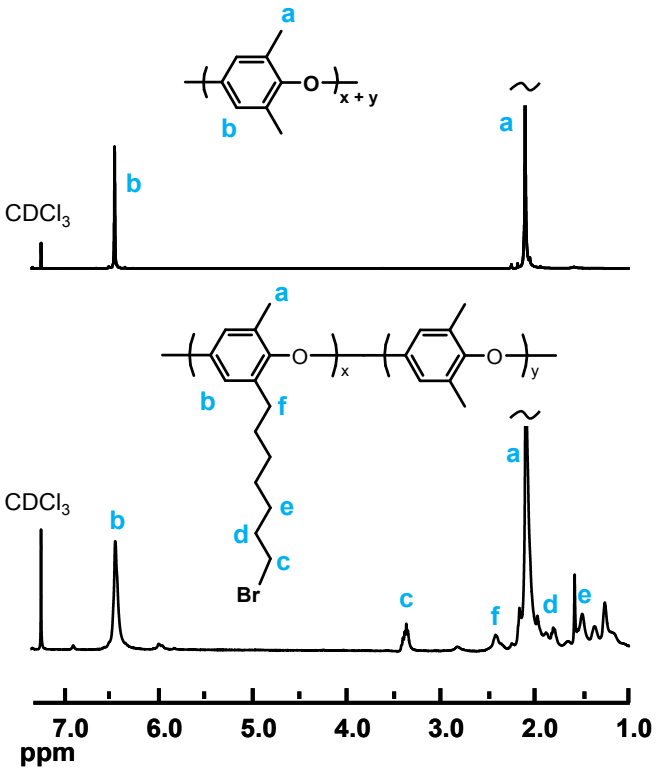

Figure S1. ^{1}H NMR spectra of PPO (upper) and bromoalkylated PPO (PPO-7Br-17, lower) recorded in $CDCl_3$ solutions of the polymers.

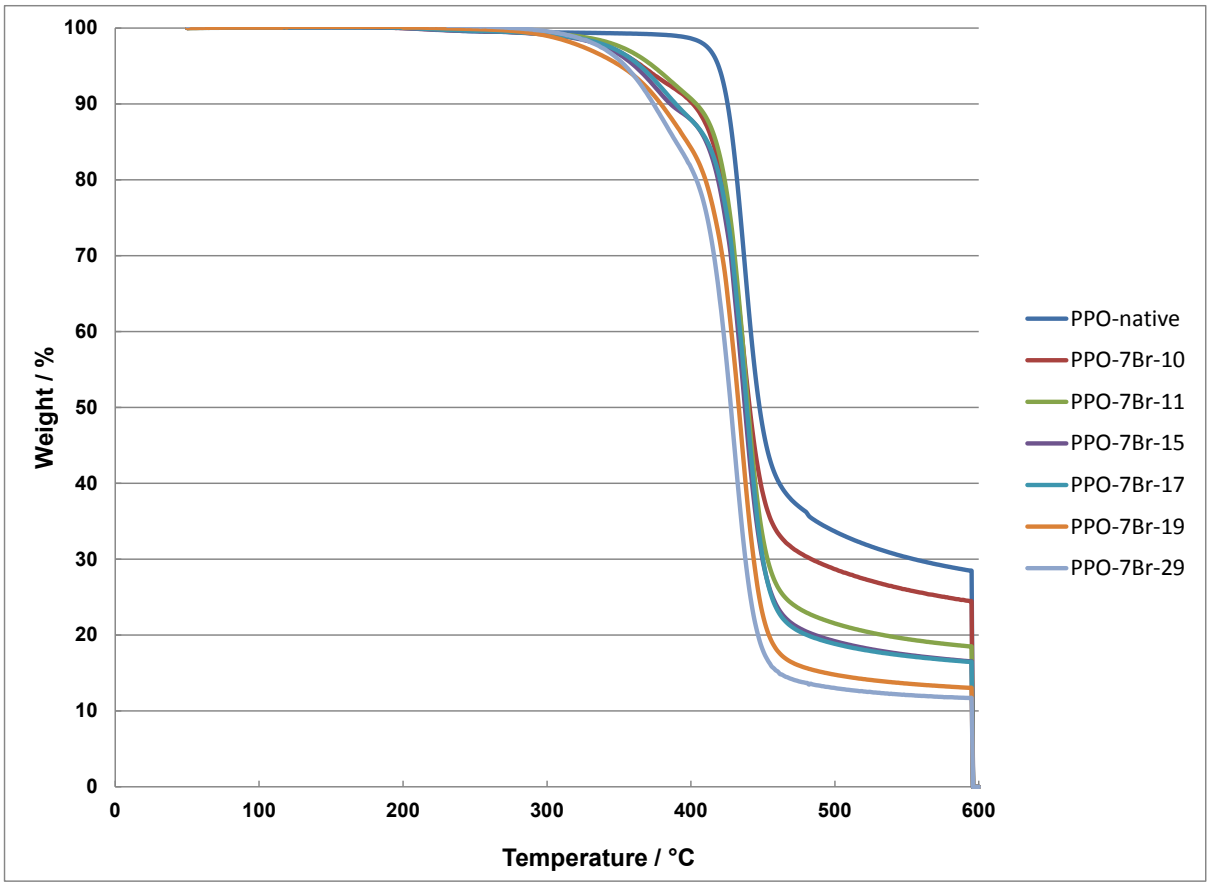

Figure S2. TGA traces of native PPO and bromoalkylated PPO-7Br-*DB* samples with DB = 10, 11, 15, 17, 19 and 29.

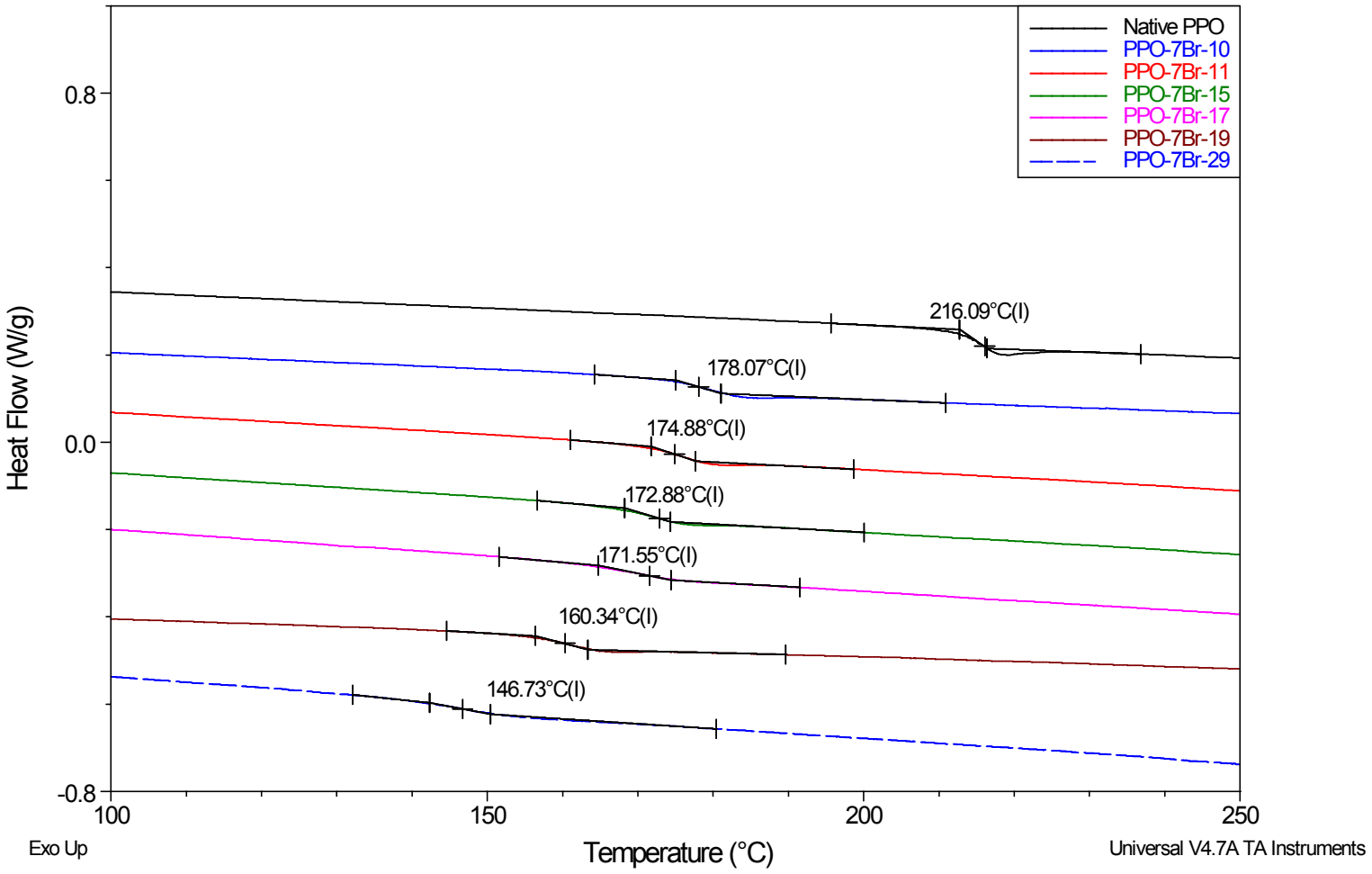

Figure S3. DSC traces of native PPO and bromoalkylated PPO-7Br-*DB* samples with DB = 10, 11, 15, 17, 19 and 29.

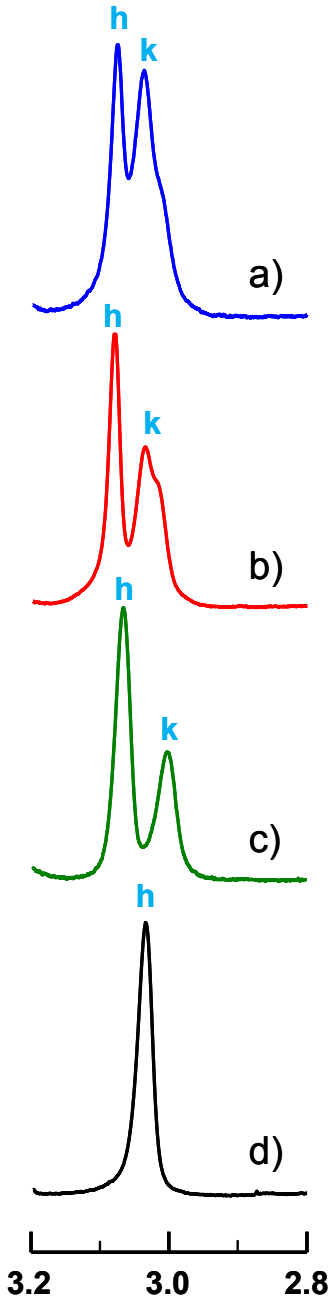

Figure S4. ^{1}H NMR spectra with the signals arising from the $-N^{+}(CH_3)_2-$ [k] and $-N^{+}(CH_3)_3$ [h] protons of the polymers in Series 3: (a) PPO-7Q6Q-1.8, (b) PPO-7Q4Q-1.8, (c) PPO-7Q3Q-1.8, (d) PPO-7Q2Q-1.9

(full spectra shown in Figure 2).

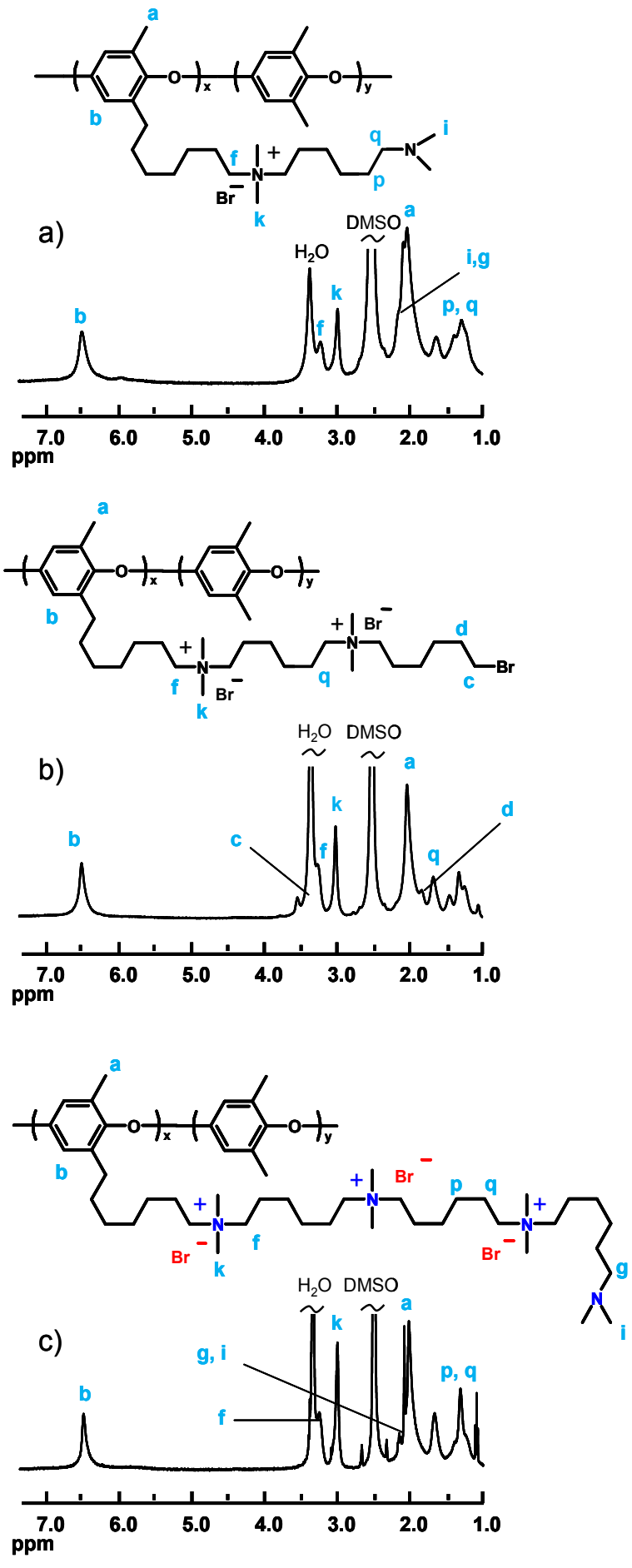

Figure S5. ^{1}H NMR spectra of the intermediate products formed in the successive reactions to prepare the samples in Series 3: (a) product formed after the reaction of PPO-7Br-10 and 1,6-diaminohexane, (b) product after further reaction with 1,6-dibromohexane, (c) product after further reaction with 1,6-diaminohexane. The full reaction pathway is depicted in the right part of Scheme 1.

Figure S6. Photograph of a PPO-7Q6Q6Q membrane indicating its flexibility and load-bearing capacity. The weight of the micrometer was 180 g and the membrane was seemingly unaffected after this treatment.

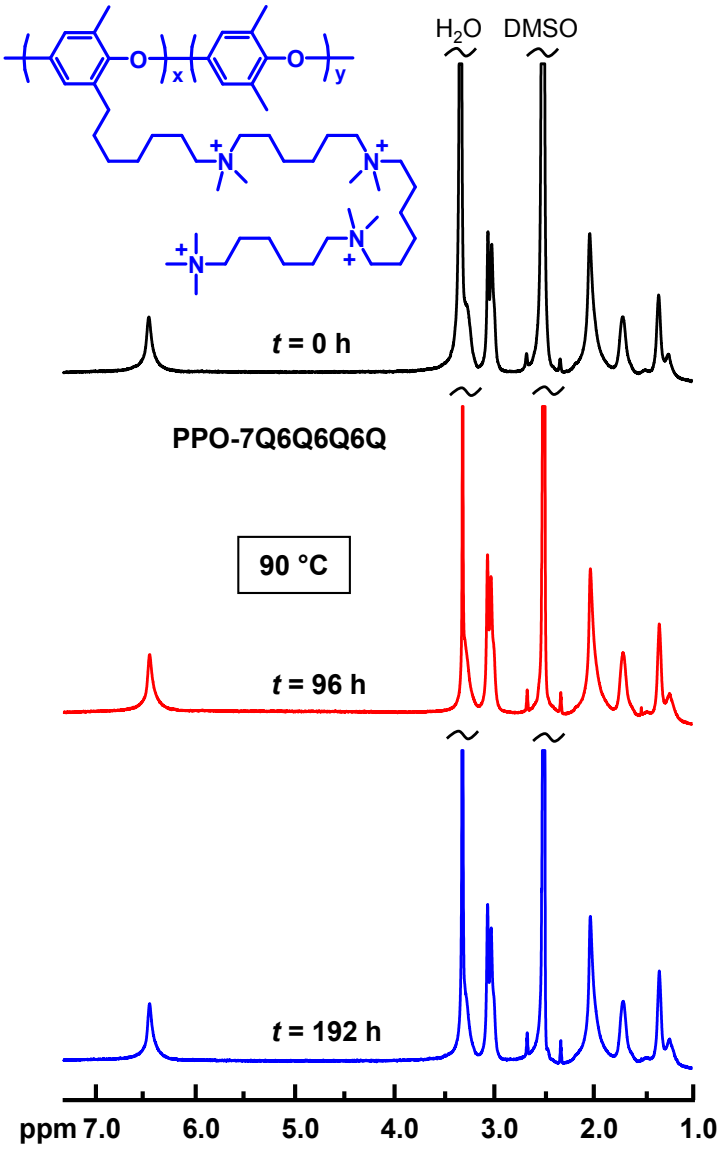

Figure S7. ^{1}H NMR spectra of PPO-7Q6Q6Q6Q-1.8 after 0, 96 and 192 h storage in 1 M aq. NaOH solution at 90 °C.