Supporting Information (SI) for

Boosting the performance of anion exchange membrane by the formation of well-connected ion conducting channels

Yan Li [a], Jujia Zhang [b], Yang Hua [a], Shanzhong Yang [a], Shanfu Lu[*, b], Haibing Wei[*, a] and Yunsheng Ding[a]

[a] *School of Chemistry and Chemical Engineering, Anhui Key Laboratory of Advanced Functional Materials and Devices, Anhui Key Laboratory of Advanced Catalytic Materials and Reaction Engineering, Hefei University of Technology, Hefei 230009, China.*

[b] *Beijing Key Laboratory of Bio-inspired Energy Materials and Devices, School of Space and Environment, Beihang University, Beijing 100191, China.*

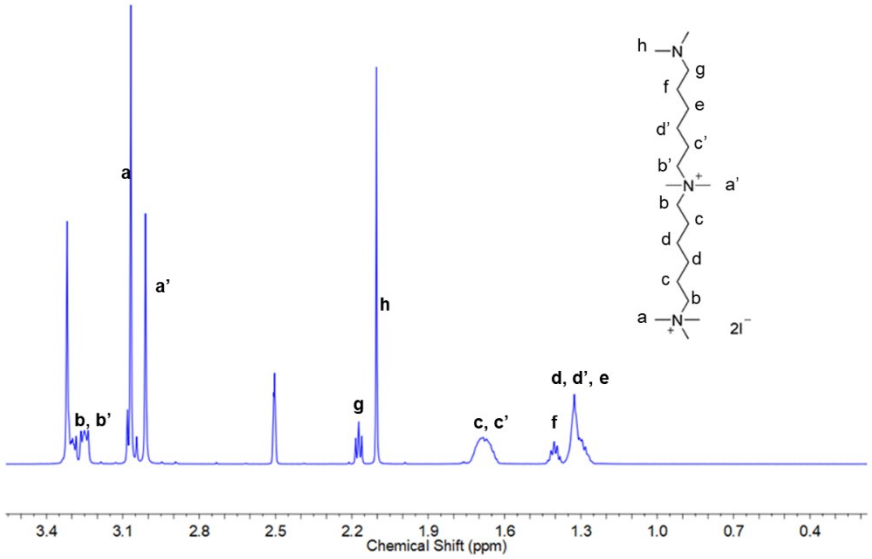

Fig. S1 ^{1}H NMR spectrum of N,N-dimethyl-6-{dimethyl[6(trimethylammonio)hexyl] ammonio} hexylamine diiodide (DMSO-d_6, 600 MHz)

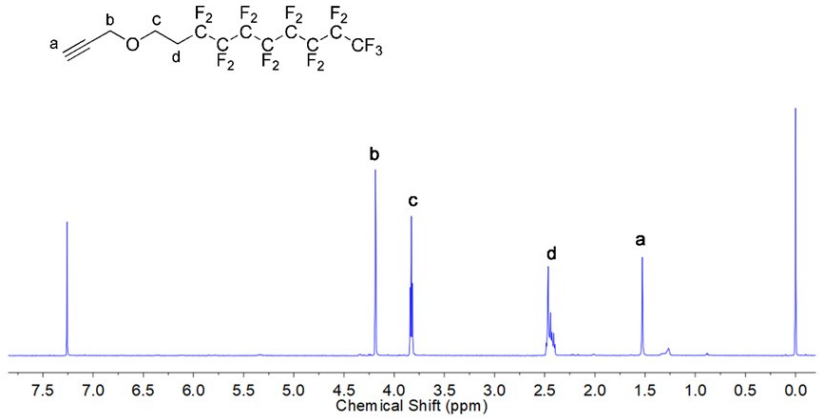

Fig. S2 ^{1}H NMR spectrum of 3-[(2-perfluorooctyl)ethoxy]prop-1-yne. ($CDCl_3$, 600 MHz)

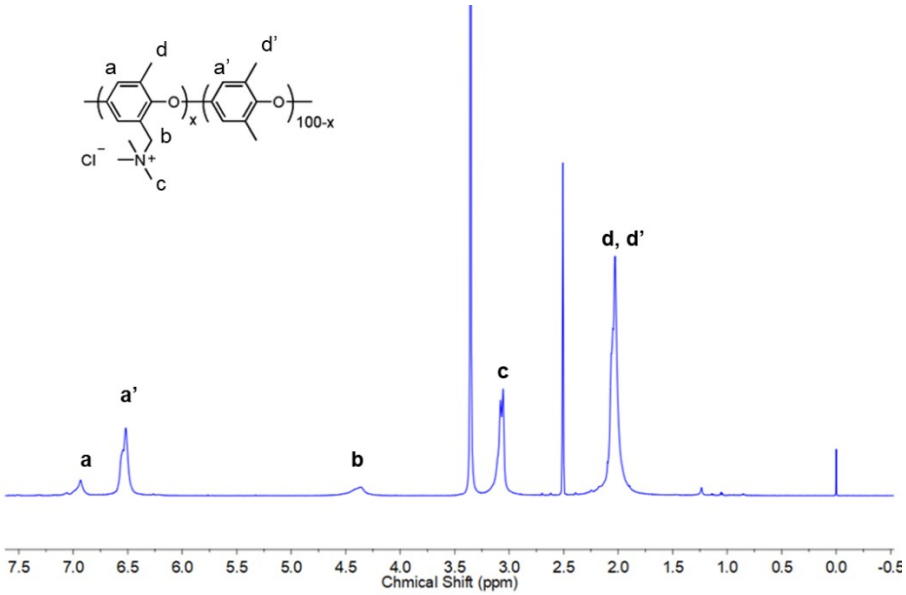

Fig. S3 ^{1}H NMR spectrum of **PPO-22-QA** (DMSO-d_6, 600 MHz)

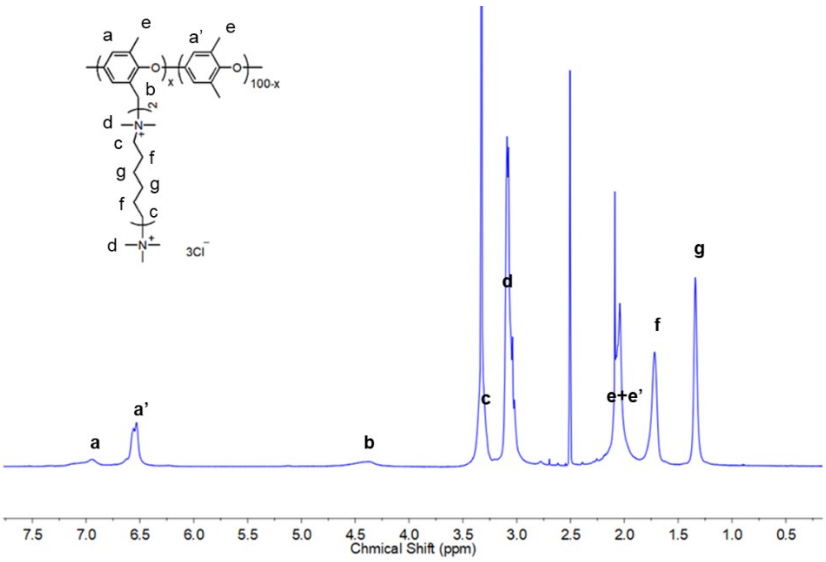

Fig. S4 ^{1}H NMR spectrum of **PPO-8-3QA** (DMSO-d_6, 600 MHz)

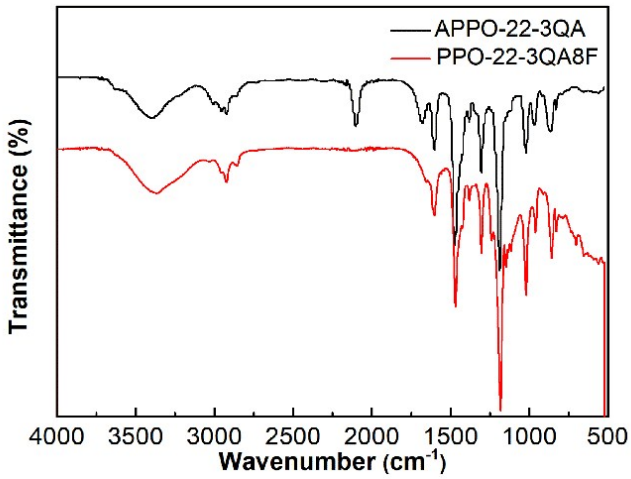

Fig. S5 FT-IR spectra of **APPO-22-3QA** and **PPO-22-3QA8F**.

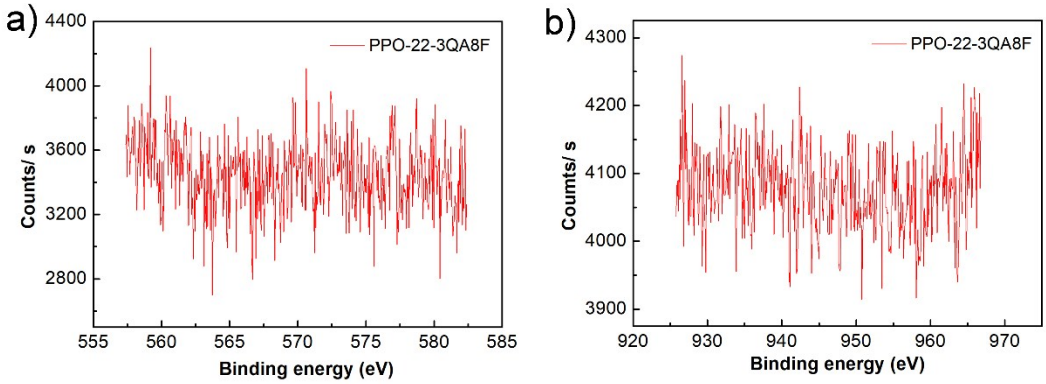

Fig. S6 The XPS spectra of a) Cu LMM; b) Cu 2p for **PPO-22-3QA8F**.

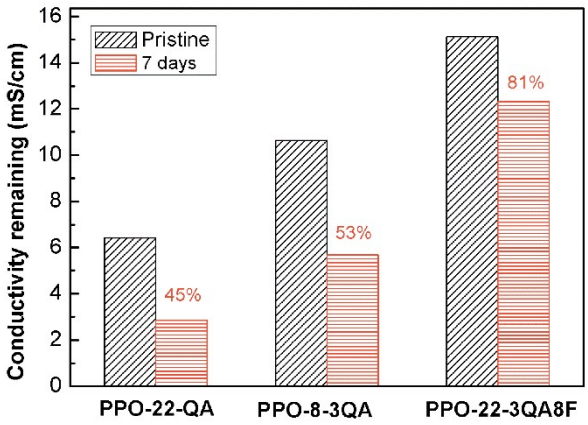

Fig. S7 The chloride conductivities at 60 °C of **PPO-22-QA**, **PPO-8-3QA** and **PPO-22-3QA8F** AEMs before and after aging in 5 M NaOH at 80 °C for 7 days

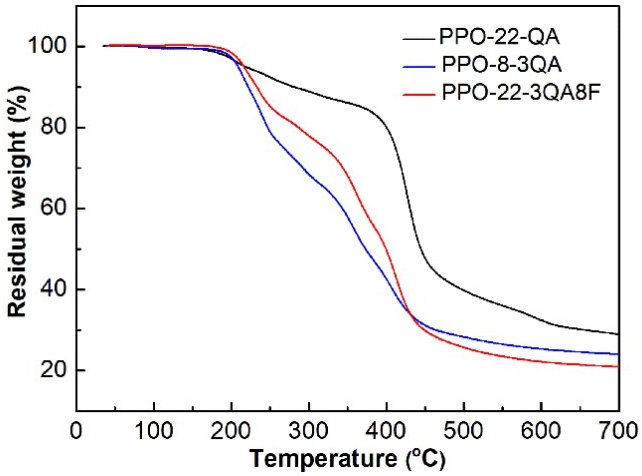

Fig. S8 TGA curves of the as-prepared **PPO-22-QA, PPO-8-3QA, PPO-22-3QA8F** AEMs (nitrogen atmosphere, 10 °C/min heating rate).