

Supplementary Information

Multi-block copolymer membranes consisting of sulfonated poly(*p*-phenylene) and naphthalene containing poly(arylene ether ketone) for proton exchange membrane water electrolysis

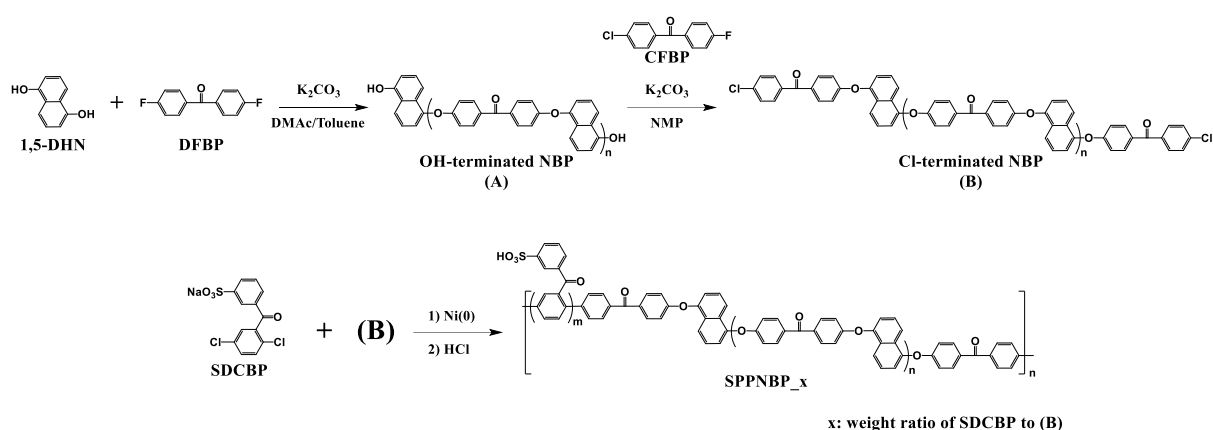
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Scheme S1. Synthesis procedure of OH-terminated NBP (A), Cl-terminated NBP (B) and SPPNBP copolymers.

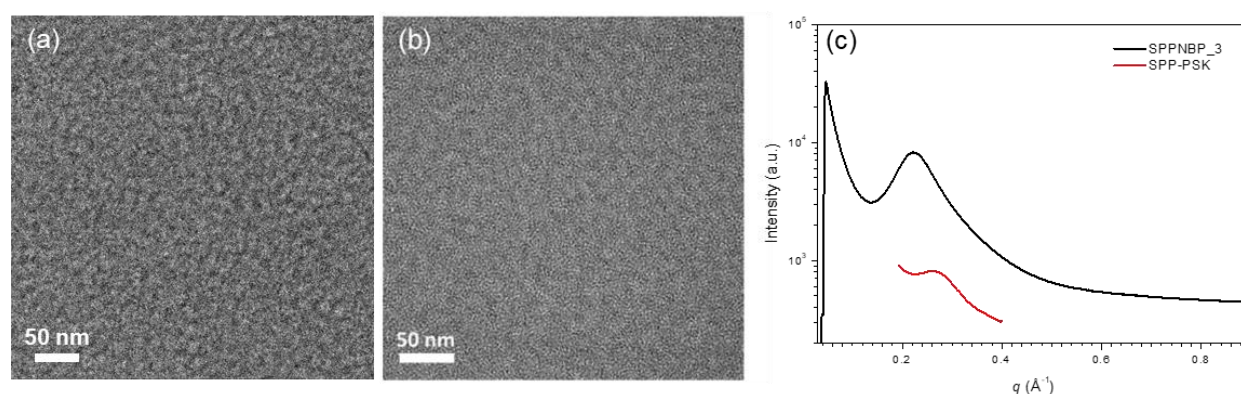


Figure S1. TEM images of (a) SPPNBP_3 and (b) SPP-PSK membranes, and (c) SAXS intensity profiles of SPPNBP_3 and SPP-PSK copolymers. (b) and (c) are reproduced from ref [1]. Copyright 2019 ACS.

Table S1. The IEC values of SPPNBP membranes through the titration and ^1H NMR methods.

	IEC (meq g ⁻¹)			Ratio ^c (%)
	Titration ^a	^1H NMR ^a	^1H NMR ^b	
SPPNBP_1	1.10	0.85	1.08	27.1
SPPNBP_3	2.05	1.46	1.23	-15.8
SPPNBP_5	2.49	1.73	1.46	-15.6
SPPNBP_7	2.06	1.50	1.23	-18.0

^a The values before the Fenton's test.

^b The values after the Fenton's test.

^c Ratio (%) = $(\text{IEC}_{\text{after}} - \text{IEC}_{\text{before}}) / \text{IEC}_{\text{before}} \times 100$ (%)

- Hong, S. H.; Cha, M. S.; Hong, S.-K.; Oh, S.-G.; Lee, J. Y. Structural Effect of the Hydrophobic Block on the Chemical Stability of Ion-Conducting Multiblock Copolymers for Flow Battery. *ACS Sustain. Chem. Eng.* 2019, 7 (20), 17088–17099. <https://doi.org/10.1021/acssuschemeng.9b03182>.