Supporting Information

Synthetic saponite clays as additives for reducing aging effects in PIM1 membranes

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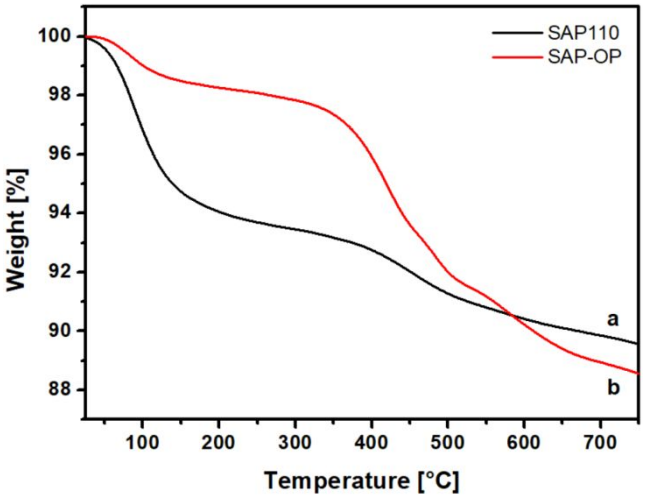

Figure S1. TGA curves of SAP110 (a) and SAP-OP (b) collected under Ar flow from 25 to 800 °C.

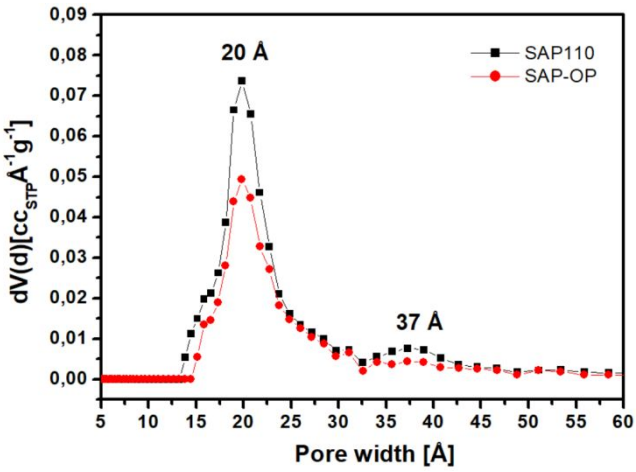

Figure S2. Pore size distribution of SAP110 (—■—) and SAP-OP (—●—).

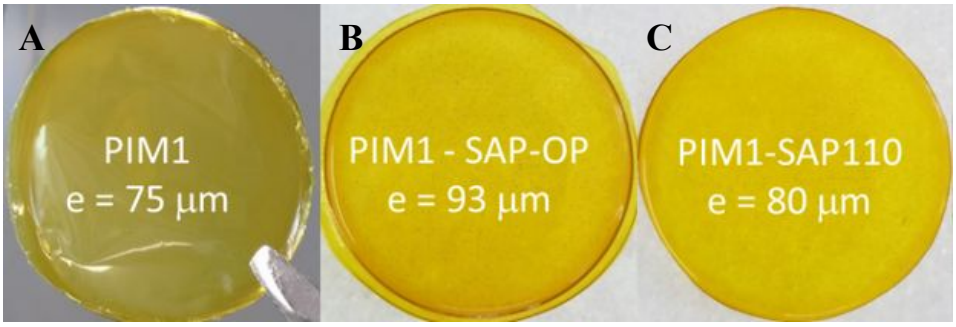

Figure S3. Pristine PIM1 (A) and MMMs (3%wt) based on PIM1 plus SAP-OP (B) and SAP110 (C). (e = thickness in µm).

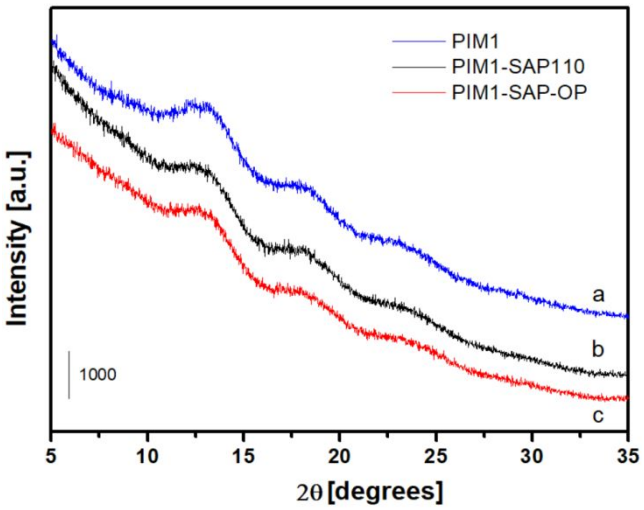

Figure S4. XRD pattern of pristine aged PIM1 membrane sample (a), aged PIM1-SAP110 (b) and aged PIM1-SAP-OP (c).

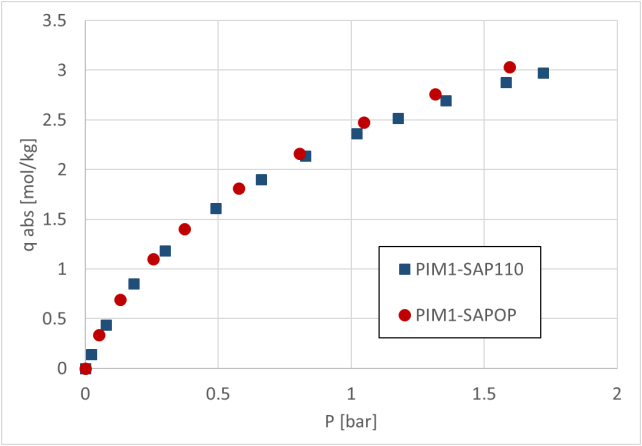

Figure S5. Carbon dioxide adsorption isotherms acquired at 273 K for mixed matrix samples.

Table S1. CHN analysis of SAP-OP sample

Sample	%C	%N	%CTA^+
SAP-OP	3.62	0.35	6.75

Table S2. ^{13}C Spin-lattice relaxation times (T_1) of various PIM1 based membranes.

^{13}C Chemical shifts δ_C [ppm]	^{13}C Spin-lattice relaxation times (s)								
	PIM1			PIM1-SAP110			PIM1-SAP-OP		
	MeOH treated	3Months aged	1Year aged	MeOH treated fresh	3Months aged	1Year aged	MeOH treated fresh	3Months aged	1Year aged
148	9.37	8.82	9.25	8.92	10.98	9.16	9.43	9.64	8.32
140	7.18	7.14	7.44	7.40	9.52	6.86	7.32	7.71	6.85
110	5.89	5.64	5.87	5.59	7.39	5.95	6.10	6.18	5.78
94	6.83	7.44	8.40	7.07	9.27	6.26	7.04	8.17	7.06
58	8.44	8.85	9.29	8.46	10.12	9.58	7.32	8.81	8.60
43	5.59	5.58	5.00	5.14	6.18	5.90	5.13	5.50	5.31
30	0.319	0.370	0.346	0.386	0.374	0.341	0.358	0.367	0.402