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Supporting Information for

High-temperature proton exchange membranes from ionic liquid absorbed/doped superabsorbents

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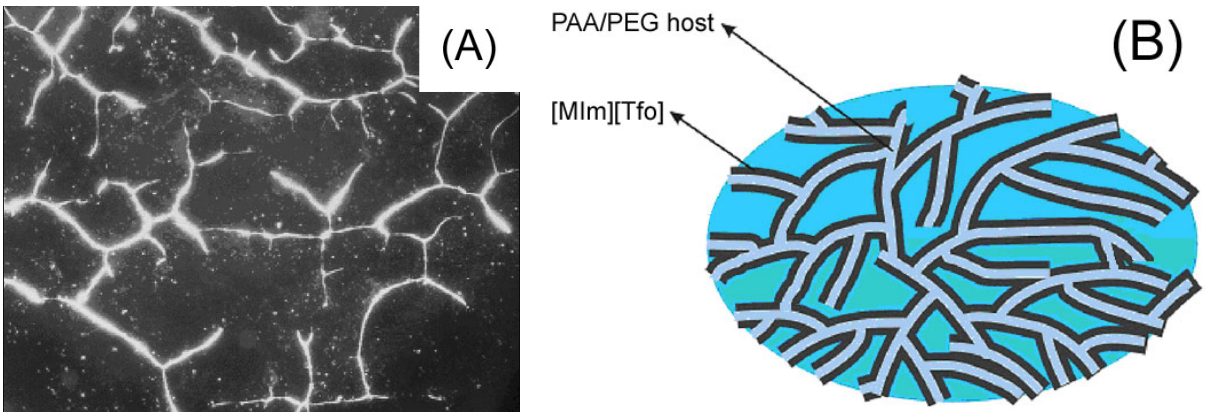

Fig. S1 (**A**) Polarizing microscopic photograph of polyacrylate/sericite hydrogel and (**B**) proton-conducting channels formed by [MIm][Tfo] in the membranes.[S1,S2]

Tab. S1 Performances of [MIm][Tfo] absorbed and doped PAA/PEG membranes and other typical PEMs

Host	Medium	RH (%)	T_{stable} (ºC)	$T_{highest}$ (ºC)	σ_{stable} ($S \cdot cm^{-1}$)	$\sigma_{highest}$ ($S \cdot cm^{-1}$)	Tensile stress (MPa)	Strain (%)	Ref
PAA/PEG	PIL	0	200	250	0.043	0.044	12.72	1214	–
Nafion	H_2O	100	60	80	0.092	0.17	10.34	136	S3,S4
Porous silica-Nafion	H_2O	75	30	–	0.08	–	–	–	S5
SPEEK	H_2O	54	–	80	–	0.11	–	–	S6
SPI nanofibers	H_2O	98	80	–	0.036	–	–	–	S7
SPI	PIL	0	120	160	0.01	0.02[a]	105	3.6	S8
SAN	PIL	0	–	160	–	0.012	–	–	S9
Nafion-POSS	PIL	0	120	150	0.0026	0.005	–	–	S10
PAPS	H_2SO_4	0	–	120	–	0.002	–	–	S11
PWA-PMA-TEOS-GPTMS-H_3PO_4-APTES	H_3PO_4	90	120	150	0.00635	0.03[b]	–	–	S12
SPEEK-silica-PWA	PWA	90	60	100	0.00364	0.0063	–	–	S13
SPI-UI	UI	0	–	180	–	0.001	–	–	S14
PBI	H_3PO_4	0	–	250	–	0.032	–	–	S15
PBI-silica	H_3PO_4	0	–	160	–	0.013	57.5	10.9	S16
SnMBm	PIL	0	–	165	–	0.045	–	–	S17
H_3PO_4 doped PBI	H_3PO_4	0	–	200	–	0.035	–	–	S18

[a] The proton conductivity was read from the Figure.

[b] The proton conductivity was measured at 50 % RH.

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