

---Supporting Information---

Spontaneous Self-Healing Ionogels for Efficient and Reliable Carbon Dioxide Separation

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Table S1. Summary of the formula for the preparation of samples used in this work

Sample name	H ₂ N-PPG- PEG-PPG- NH ₂ (g)	BTC (g)	Molar ratio of CHO/NH ₂	[EMIm]TFSI (g)
I-SPN ₉₀ /IL ₆₀	1.50	0.07680	90: 100	2.25
I-SPN ₉₅ /IL ₆₀	1.50	0.08107	95: 100	2.25
I-SPN ₁₀₀ /IL ₆₀	1.50	0.08533	100: 100	2.25
I-SPN ₁₀₅ /IL ₆₀	1.50	0.08960	105: 100	2.25
I-SPN ₁₁₀ /IL ₆₀	1.50	0.09387	110: 100	2.25
I-SPN ₉₅ /IL ₅₀	1.50	0.08107	95: 100	1.50
I-SPN ₉₅ /IL ₇₀	1.50	0.08107	95: 100	3.50
I-SPN ₉₅ /IL ₀	3.00	0.16214	95: 100	0

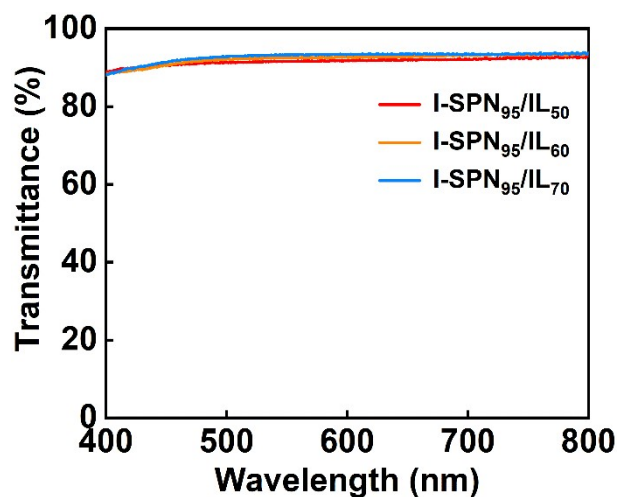


Fig. S1 UV-vis spectra of the I-SPN₉₅/IL₅₀, I-SPN₉₅/IL₆₀, and I-SPN₉₅/IL₇₀ ionogels.

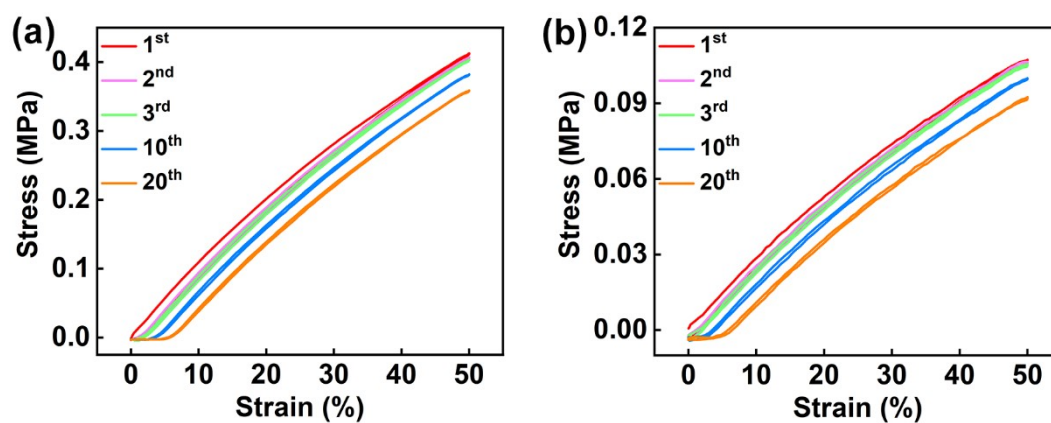


Fig. S2 Continuous cyclic stress-strain curves of the (a) I-SPN₉₅/IL₅₀ and (b) I-SPN₉₅/IL₇₀ ionogels.

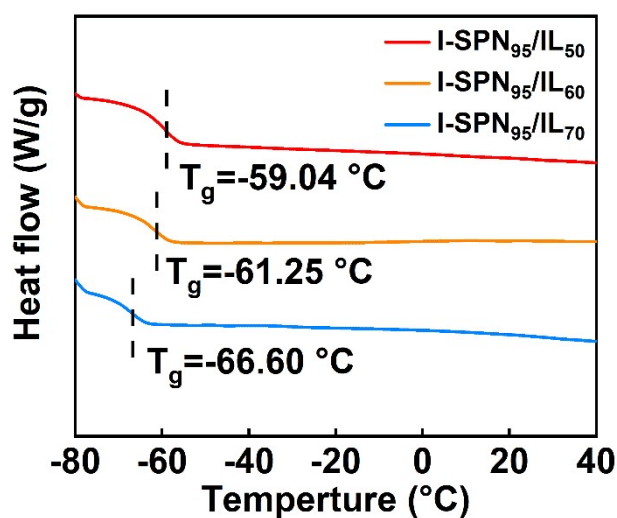


Fig. S3 DSC curves of the I-SPN₉₅/IL₅₀, I-SPN₉₅/IL₆₀, and I-SPN₉₅/IL₇₀ ionogels.

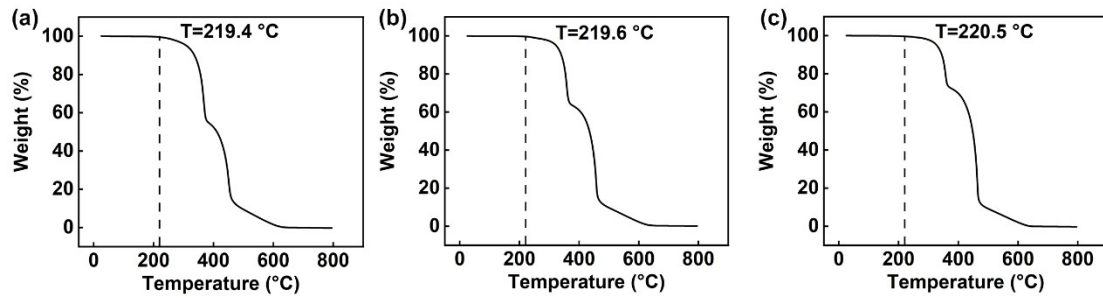


Fig. S4 TGA curves of (a) I-SPN₉₅/IL₅₀, (b) I-SPN₉₅/IL₆₀, and (c) I-SPN₉₅/IL₇₀ ionogels.

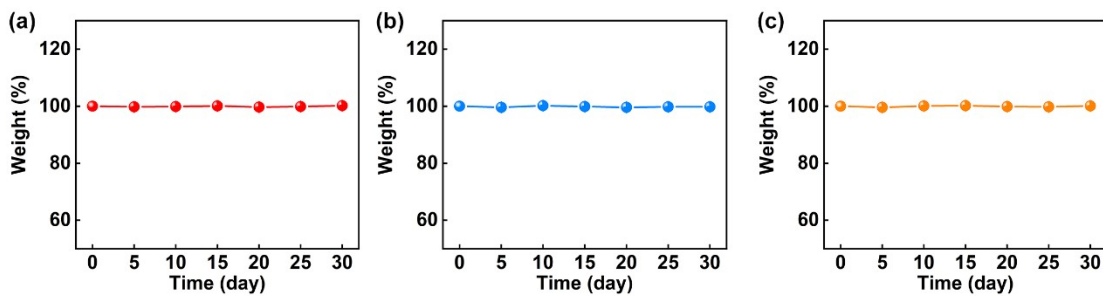


Fig. S5 The weight changes of (a) I-SPN₉₅/IL₅₀, (b) I-SPN₉₅/IL₆₀, and (c) I-SPN₉₅/IL₇₀ ionogels in a vacuum environment over time.

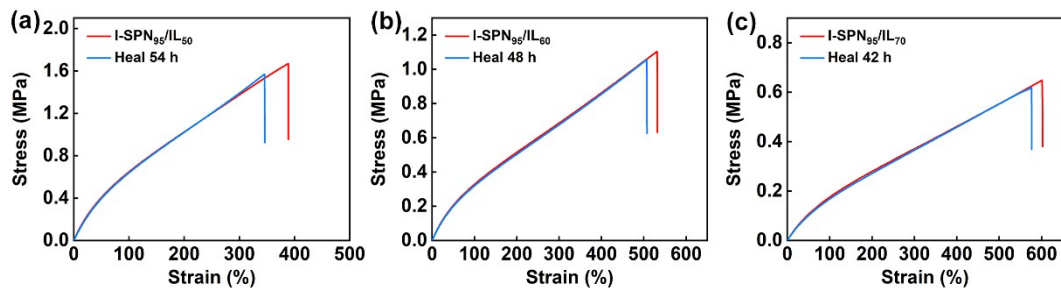


Fig. S6 Stress-strain curves of pristine and healed (a) I-SPN₉₅/IL₅₀, (b) I-SPN₉₅/IL₆₀, and (c) I-SPN₉₅/IL₇₀ ionogels.

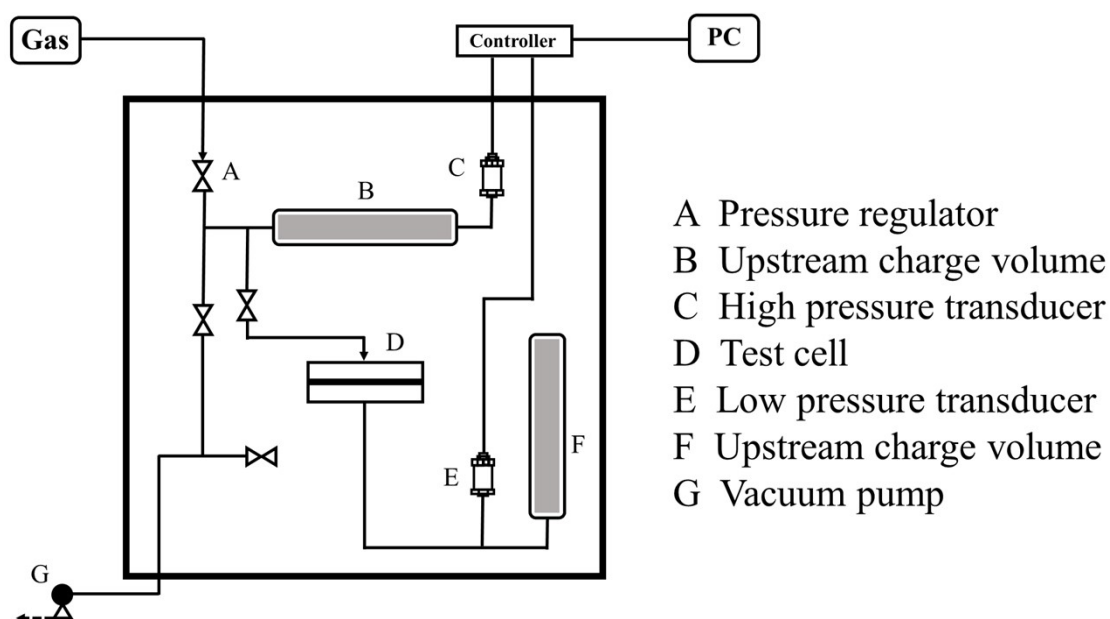


Fig. S7 Schematic of the homemade gas permeation testing equipment.

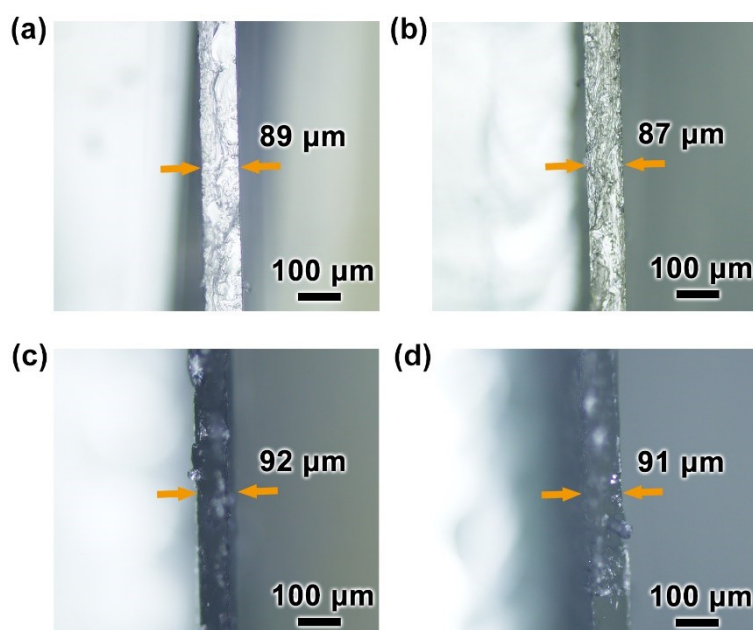


Fig. S8 Cross-sectional microscope images of the (a) I-SPN₉₅/IL₀, (b) I-SPN₉₅/IL₅₀, (c) I-SPN₉₅/IL₆₀, and (d) I-SPN₉₅/IL₇₀ ionogels.

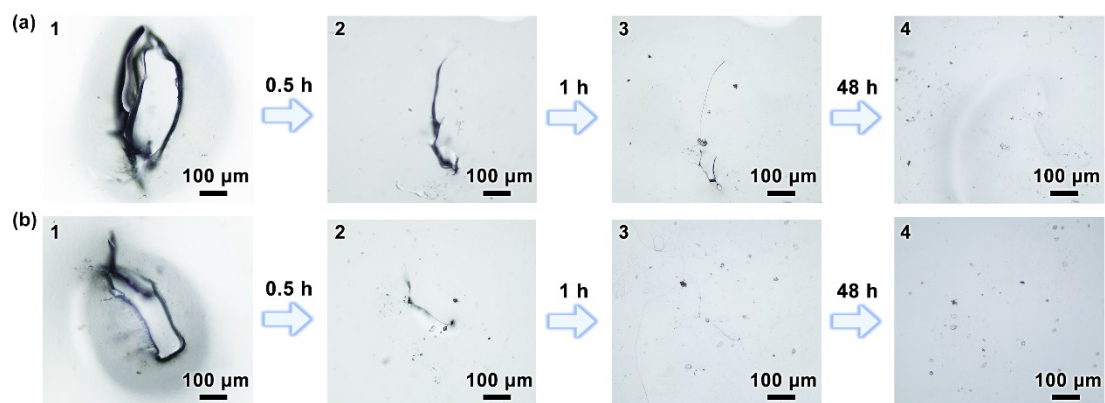


Fig. S9 Microscope images of the pierced (a) I-SPN₉₅/IL₅₀ and (b) I-SPN₉₅/IL₆₀ ionogels (1) before and after healing for (2) 0.5 h, (3) 1 h, and (4) 48 h.