

Polyionic liquid ionogels formed via hydrophobic association for flexible strain sensors

Table S1 Ingredients for the synthesis of Cho-AA VILs.

Chemicals	content(g)
AAc	0.7206
EDC·HCl	1.9170
NHS	0.2302
Cho-Asp	2.3628
Cho-Arg	2.7738
Cho-Asn	2.3530

Table S2 The formulations of Cho-Ax ionogels.

Samples	Cho-AA VILs(g)	AAm (g)	C ₁₈ (uL)	BC (g)	SDS (g)	APS (uL)	TEMED (uL)	H ₂ O (mL)
Cho-Asp _{5%}	0.20	1	110	1	0.7	100	25	3
Cho-Asp _{10%}	0.41	1	110	1	0.7	100	25	3
Cho-Asp _{15%}	0.61	1	110	1	0.7	100	25	3
Cho-Arg _{5%}	0.23	1	110	1	0.7	100	25	3
Cho-Arg _{10%}	0.47	1	110	1	0.7	100	25	3
Cho-Arg _{15%}	0.70	1	110	1	0.7	100	25	3
Cho-Asn _{5%}	0.20	1	110	1	0.7	100	25	3
Cho-Asn _{10%}	0.41	1	110	1	0.7	100	25	3
Cho-Asn _{15%}	0.61	1	110	1	0.7	100	25	3

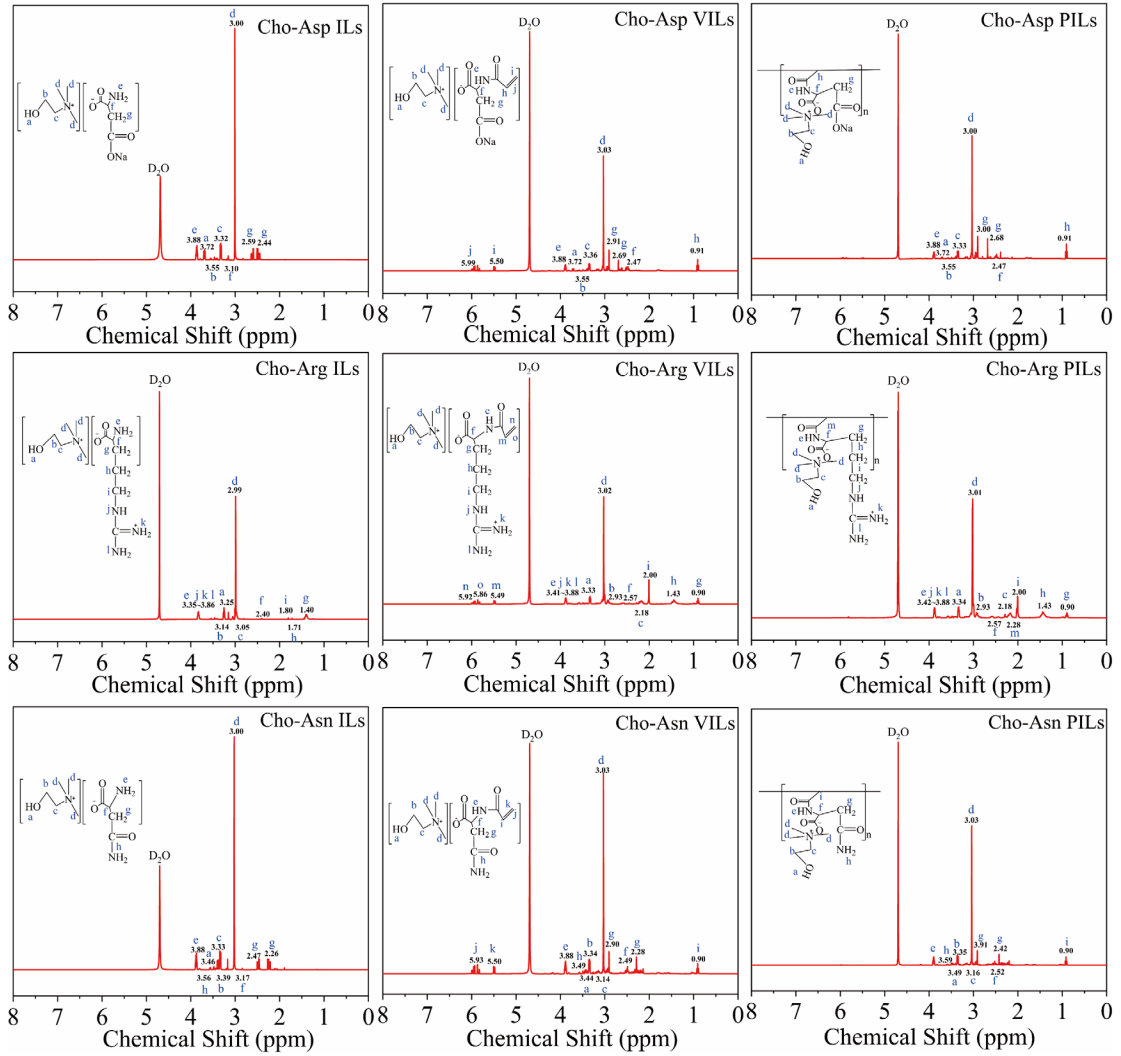


Fig. S1 ^1H NMR spectra of Cho-AA ILs, Cho-AA VILs and Cho-AA PILs.

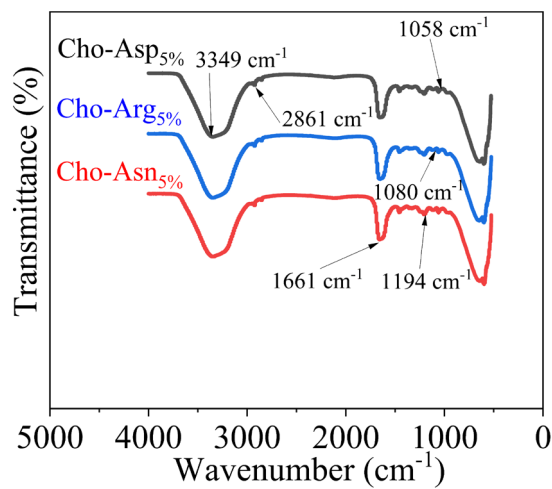


Fig. S2 ATR-FTIR spectra of Cho-Ax ionogels.

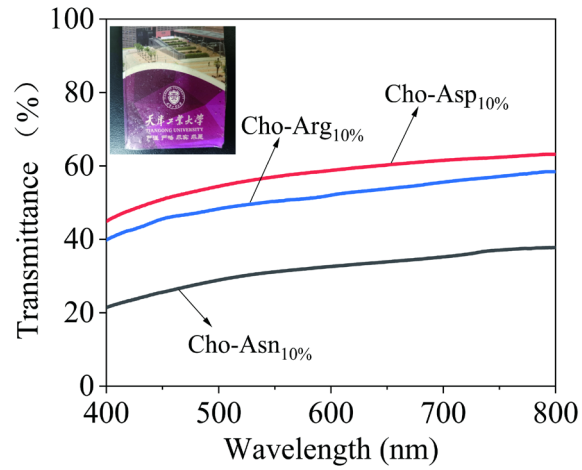


Fig. S3 UV spectra of Cho-A_{10%} ionogels.

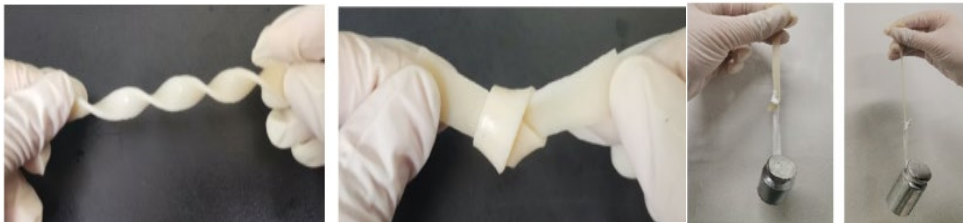


Fig. S4 Cho-Asp_{10%} ionogel twists, knots, and withstands 200 g and 500 g weights.

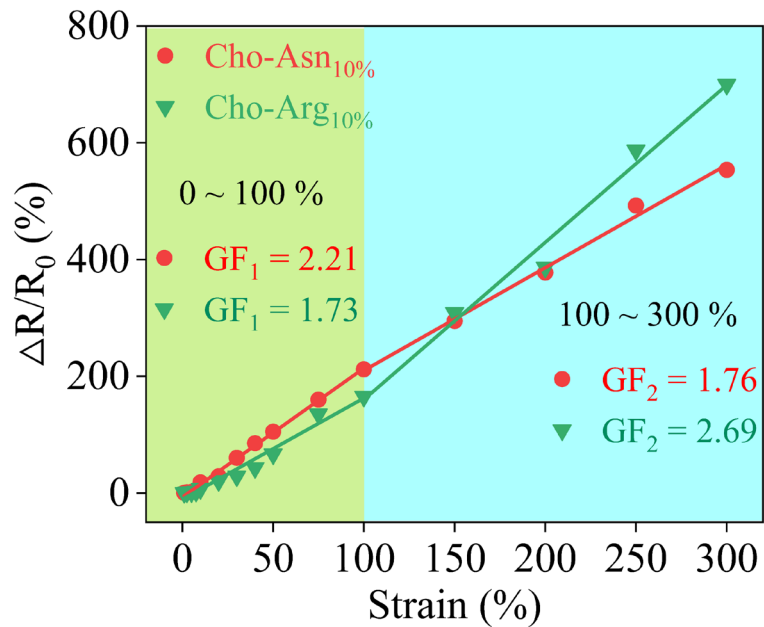


Fig. S5 Gauge factor (GF) of Cho-A_{10%} sensors at 0~300% of strain.

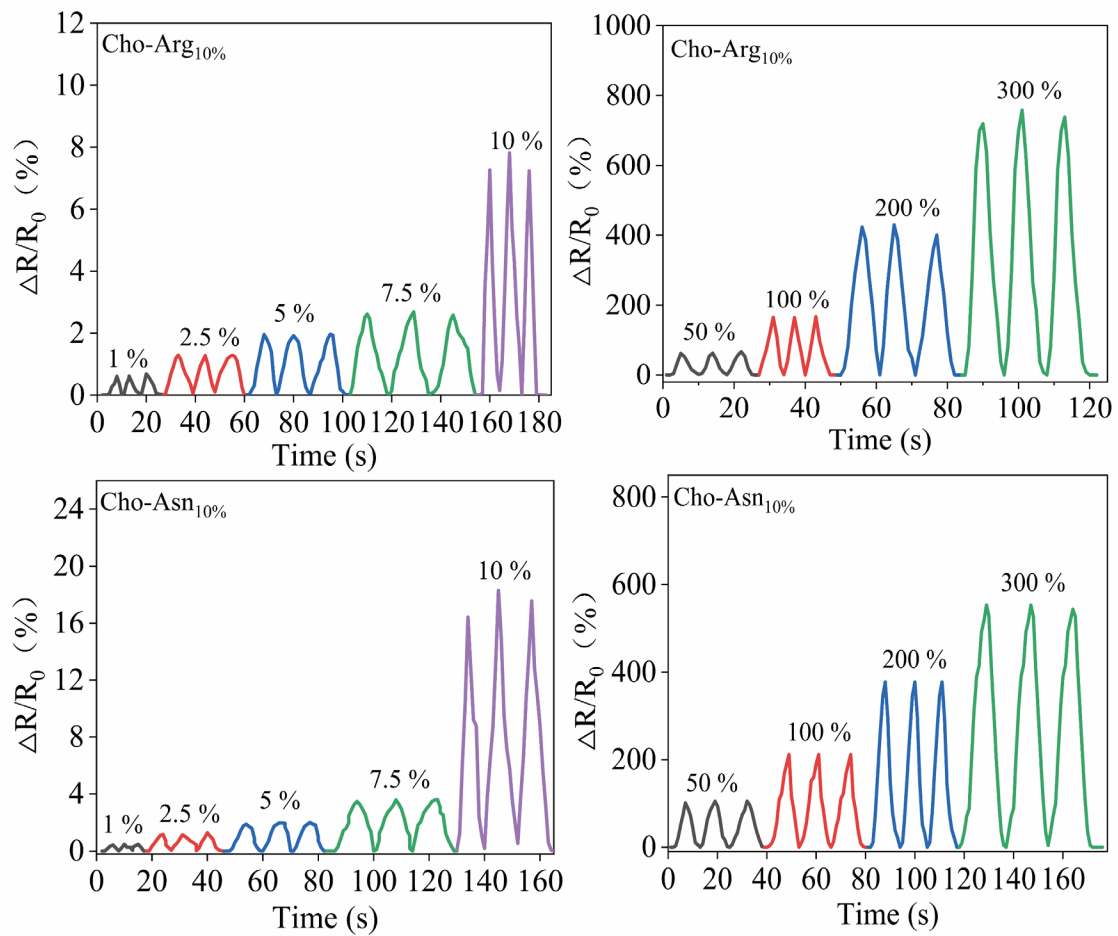


Fig. S6 Relative resistance response of Cho-A_{10%} sensors after cyclic stretching at small and large strains.

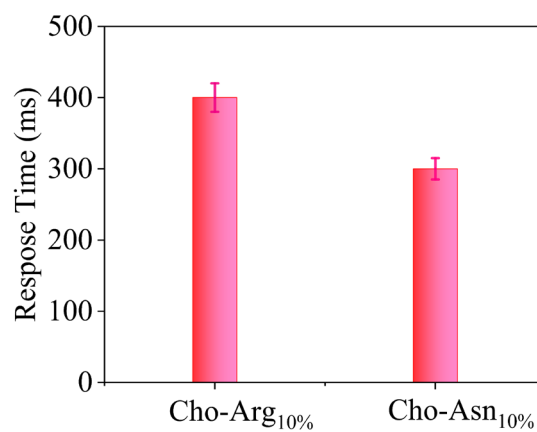


Fig. S7 The response time of Cho-A_{10%} sensors at 300% of strain.

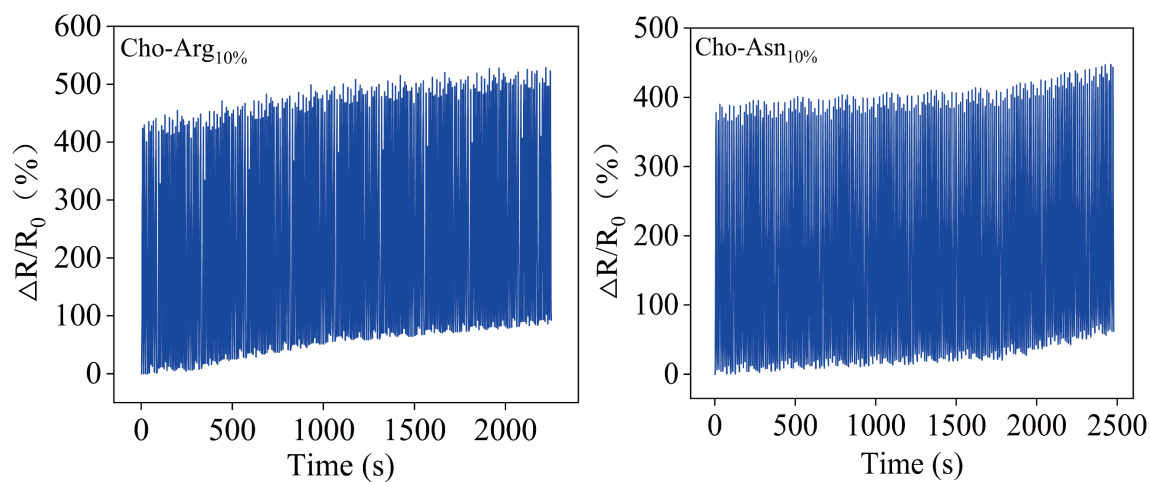


Fig. S8 Relative resistance response of the Cho-Ax sensors to cyclic strain (200 %) for 200 cycles.

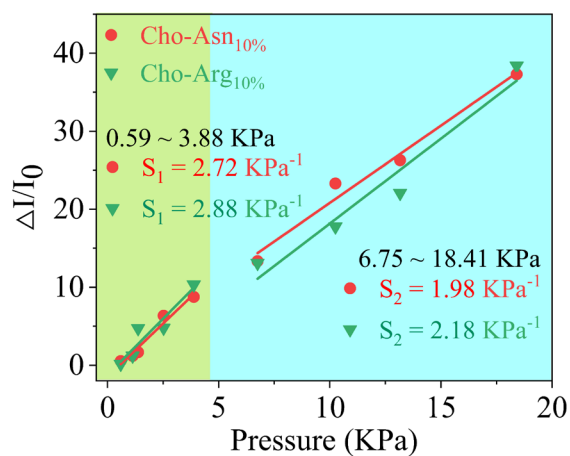


Fig. S9 Pressure sensitivity (S) of original and self-healing Cho-A_{10%} sensors at low pressures (0.59 ~ 3.88 KPa) and high pressures (6.75 ~ 18.41 KPa).

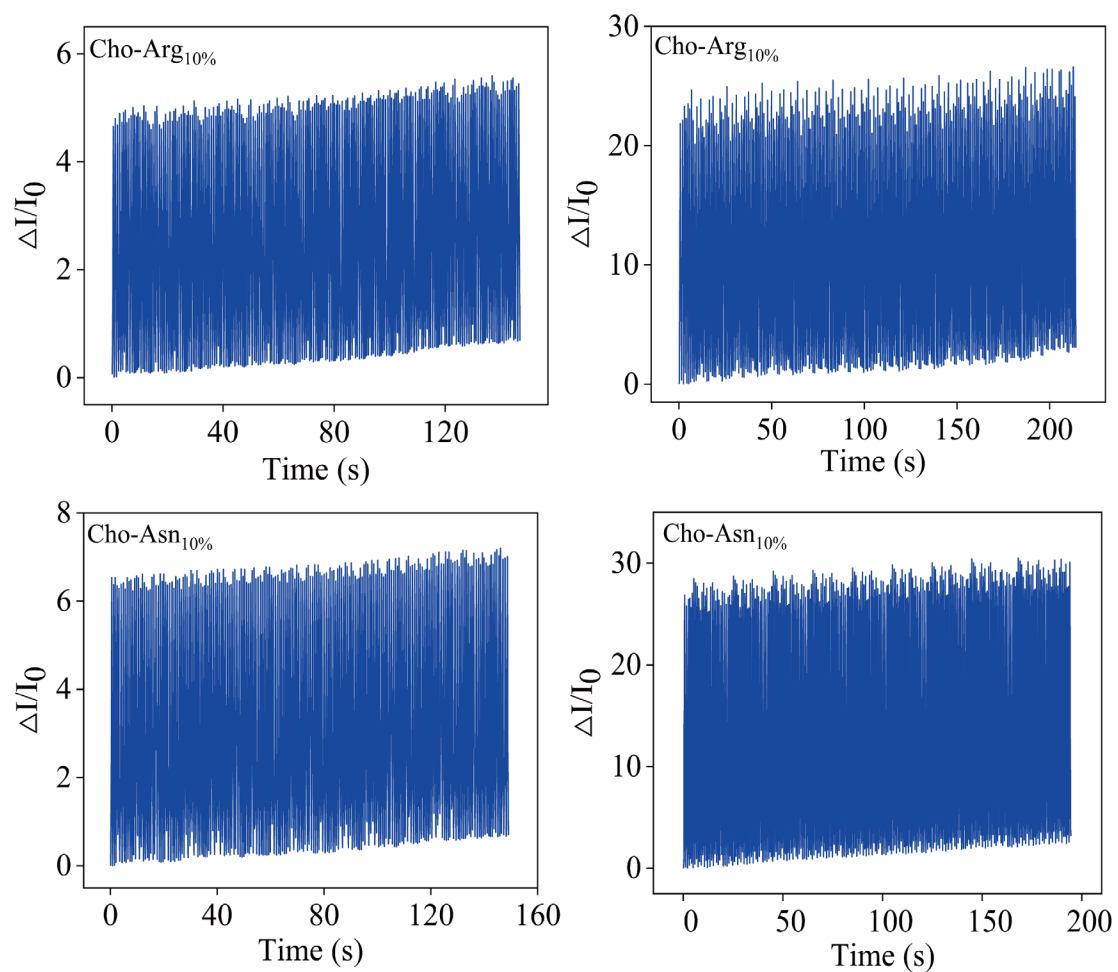


Fig. S10 Relative current changes at low pressures (2.52 KPa) and high pressures (13.16 KPa) for 200 cycles of loading-unloading of Cho-A_{10%} sensors.

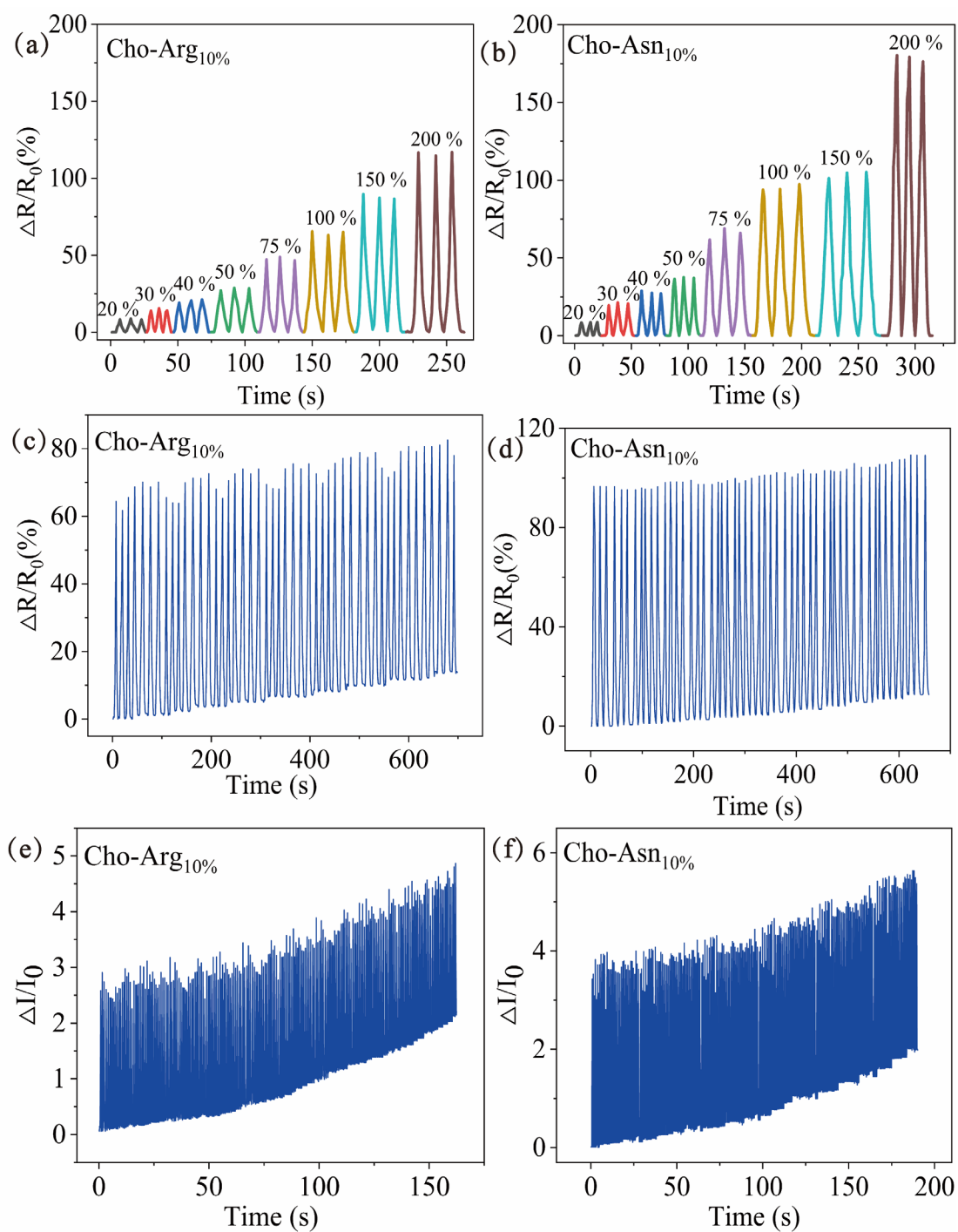


Fig. S11 Relative resistance response of Cho-Arg_{10%} (a) and Cho-Asn_{10%} (b) ionogels under different strains from 20 % to 200 % at -20 °C. Relative resistance response of Cho-Arg_{10%} (c) and Cho-Asn_{10%} (d) ionogels to cyclic strain (100%) over 50 cycles at -20 °C. Relative current changes of Cho-Arg_{10%} (e) and Cho-Asn_{10%} (f) ionogels to cyclic pressure (13.16 KPa) over 200 cycles at -20 °C.