

Supplementary material

Electrically Tunable Coloration in Polymer Dispersed Liquid Crystal Films for Adaptive

Camouflage

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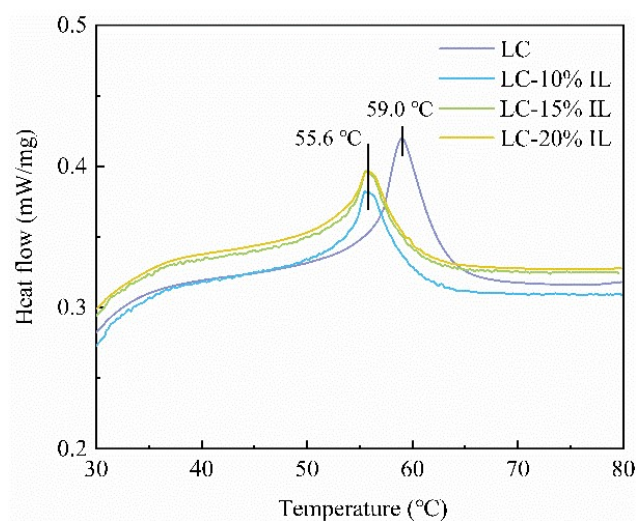


Fig.S1. DSC curves of pure LC and LC doped with 10 wt%, 15 wt%, and 20 wt% IL.

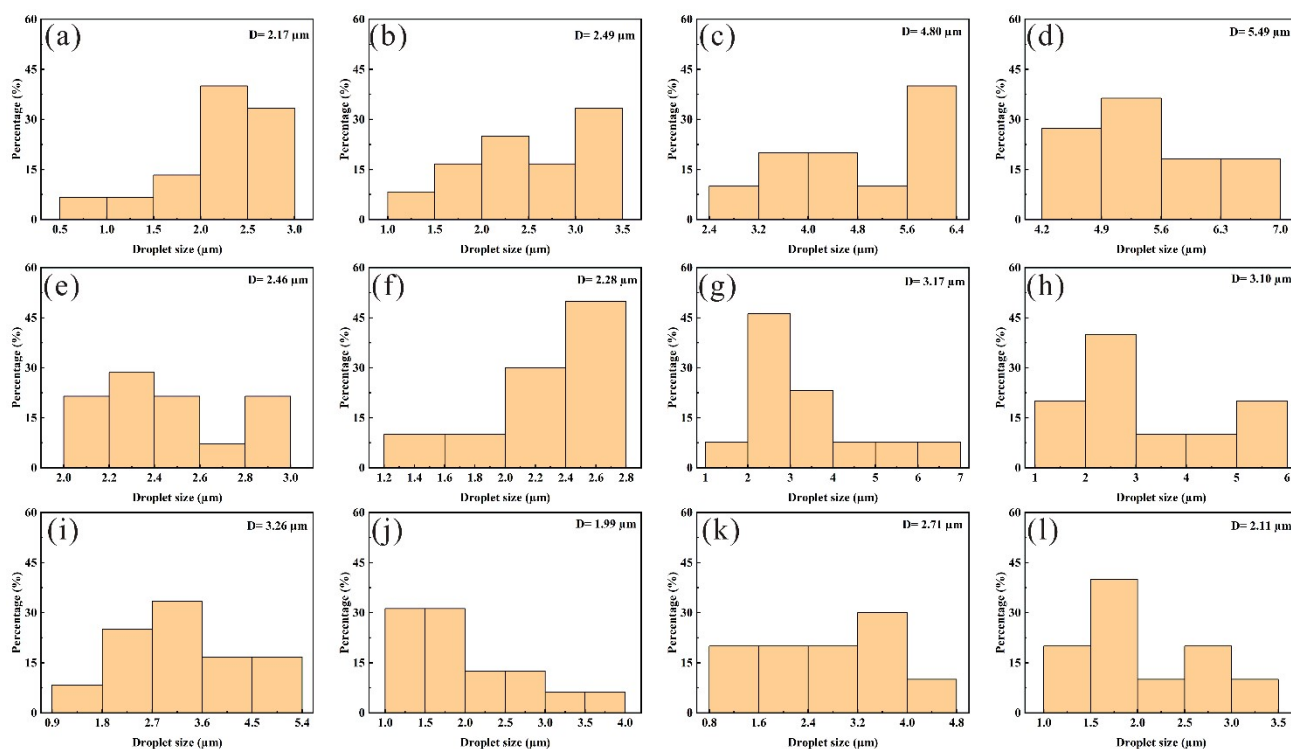


Fig. S2 LC droplet size distribution of (a) 0-10 PDLC film, (b) 1-10 PDLC film, (c) 3-10 PDLC film, (d) 5-10 PDLC film, (e) 0-15 PDLC film, (f) 1-15 PDLC film, (g) 3-15 PDLC film, (h) 5-15 PDLC film, (i) 0-20 PDLC film, (j) 1-20 PDLC film, (k) 3-20 PDLC film, and (l) 5-20 PDLC film.

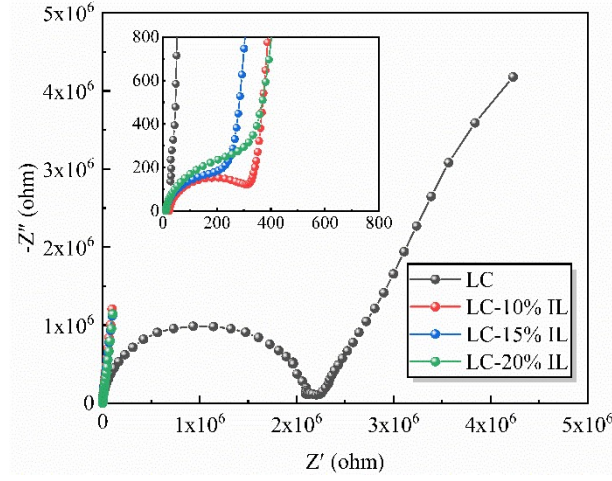


Fig.S3 Nyquist plots of pure LC and LC doped with 10 wt%, 15 wt%, and 20 wt% IL

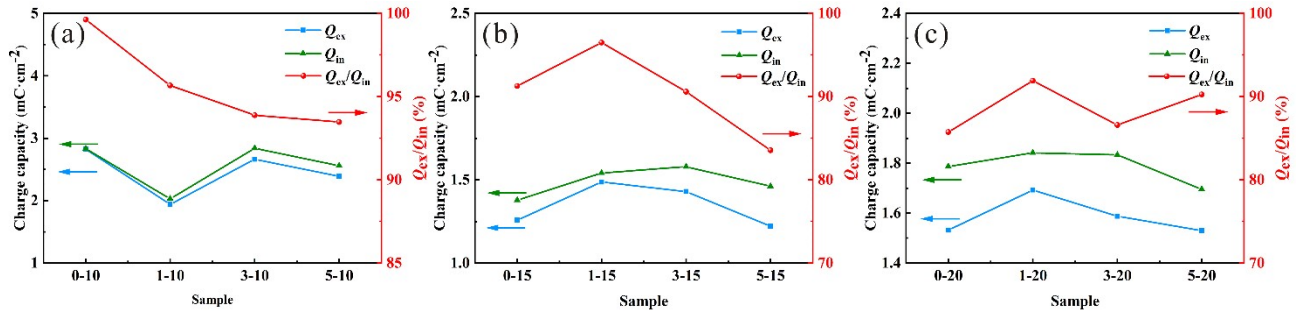


Fig. S4. Extracting and injecting charges and their ratios of PDLC doped with (a) 10 wt%, (b) 15 wt%, and (c) 20 wt% IL.

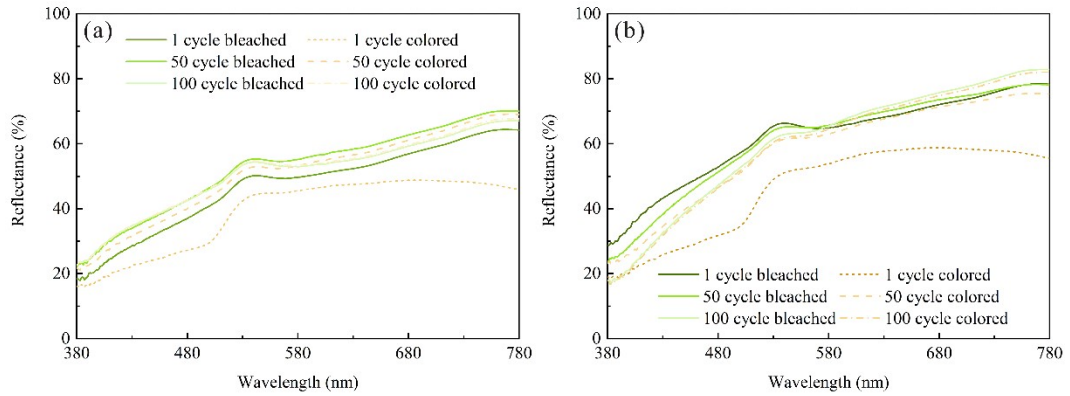


Fig. S5 Comparison of optical reflection of (a) 3-10 PDLC film and (b) 3-20 PDLC film before and after consecutive cycles for different times.

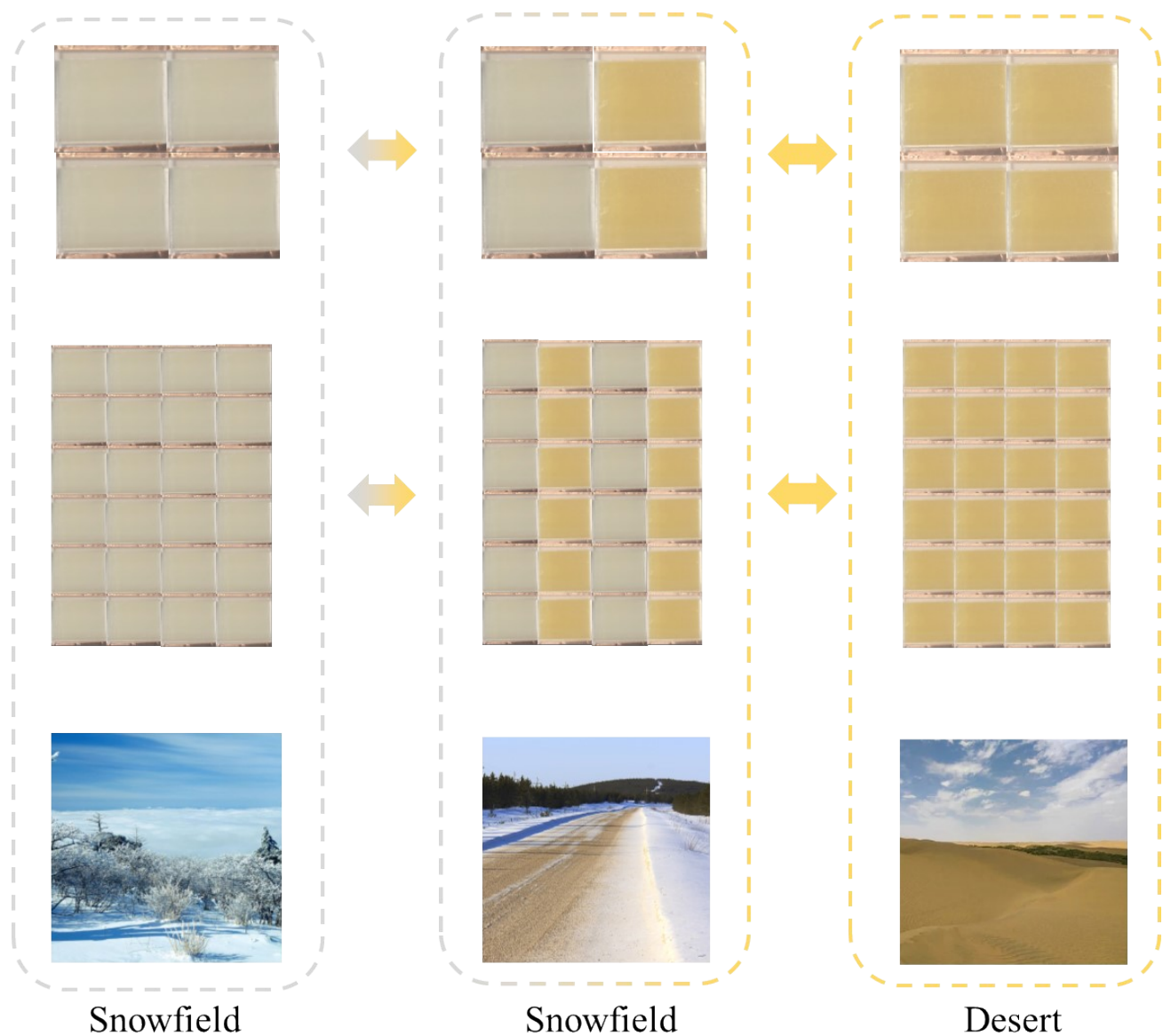


Fig. S6 Simulated visual images of simple camouflage devices designed to replicate the colors of snowfield and desert backgrounds.

Table S1 CIE color coordinates of PDLC films with IL and Cr₂O₃ at different potentials.

CIE 1931	0 V			5 V			-5 V		
	<i>L</i> [*]	<i>a</i> [*]	<i>b</i> [*]	<i>L</i> [*]	<i>a</i> [*]	<i>b</i> [*]	<i>L</i> [*]	<i>a</i> [*]	<i>b</i> [*]
0-10	96.17	-2.66	25.33	92.20	-0.73	68.14	95.83	-2.42	26.63
1-10	91.61	-7.95	27.11	94.46	-5.53	69.24	91.30	-7.38	27.99
3-10	85.60	-11.19	29.47	94.60	-7.04	63.50	85.55	-10.37	30.05
5-10	79.90	-14.15	31.45	92.45	-10.42	71.22	80.25	-13.17	31.40
0-15	96.25	-3.20	26.51	90.90	0.41	90.01	95.91	-3.09	28.63
1-15	94.74	-5.89	28.10	92.84	-2.97	78.63	94.18	-5.38	28.91
3-15	90.17	-10.20	29.04	92.39	-1.94	85.30	89.38	-9.70	31.14
5-15	82.24	-13.92	28.70	92.33	-5.98	95.40	82.43	-13.13	31.01
0-20	96.38	-3.33	24.88	89.59	2.56	88.97	96.01	-2.75	26.65
1-20	92.26	-8.13	29.58	89.60	4.32	90.07	91.17	-7.13	31.03
3-20	88.80	-11.04	30.39	94.04	-5.58	80.26	88.75	-10.35	32.54
5-20	81.32	-15.58	32.52	93.02	-7.28	83.98	80.94	-15.02	33.23