Supporting information

Screen-printed supercapacitors based on vitamin B_2 functionalized carbon electrodes and deep eutectic solvent electrolytes

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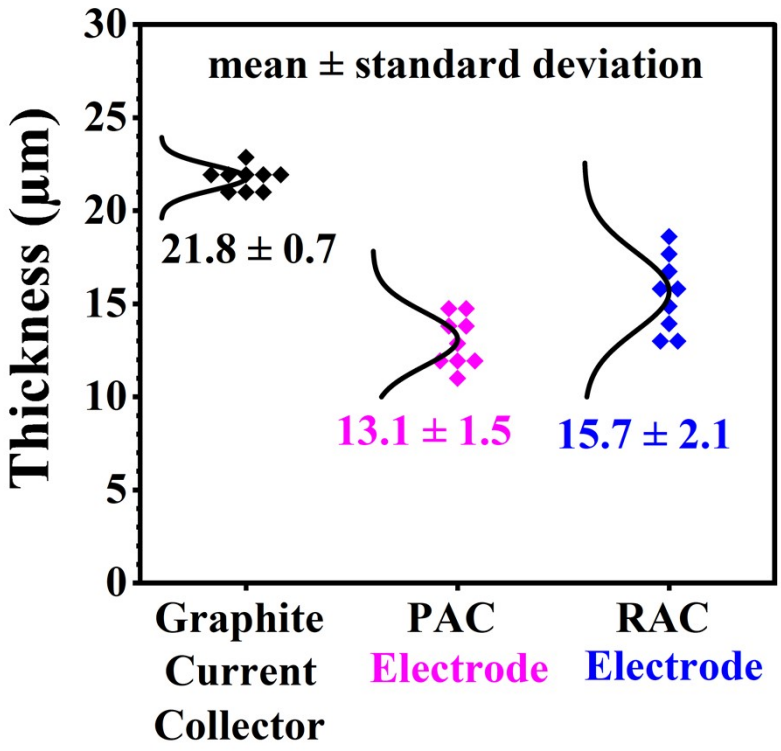

Fig. S1. Measurement of printed current collectors and electrodes thickness using a digital micrometer and the thickness was determined from multiple points across the printed area of the screen-printed current collector and electrodes layers.

Table S1. Elemental composition (At%) of the PAC sample from XPS analysis

	PAC		
Element	**Position**	**FWHM**	**At%**
C 1s (C-C)	284.8	1.46	35.94
C 1s(C-O)	285.95	1.46	21.69
C 1s(C=O)	286.94	1.97	21.1
C 1s(O=C-O)	289.48	3.13	9.78
O 1s(C=O/O-C=O)	533.4	3.16	6.75
O 1s(C-O)	534.26	3.16	4.17
O 1s(COOH)	535.22	3.16	0.57

Table S2. Elemental composition (At%) of the RAC sample from XPS analysis

	RAC		
Element	**Position**	**FWHM**	**At%**
C 1s(C-C)	284.8	1.66	30.74
C 1s(C-O)	286.2	1.66	27.58
C 1s(N-C=O)	287.45	1.66	14.69
C 1s(O=C-O)	289.08	3.44	12.96
N 1s	399.41	3.92	1.6
O 1s(N-C=O)	531.97	3.13	6.32
O 1s(C-O)	533.58	3.13	5.17
O 1s(COOH)	534.14	3.13	0.94

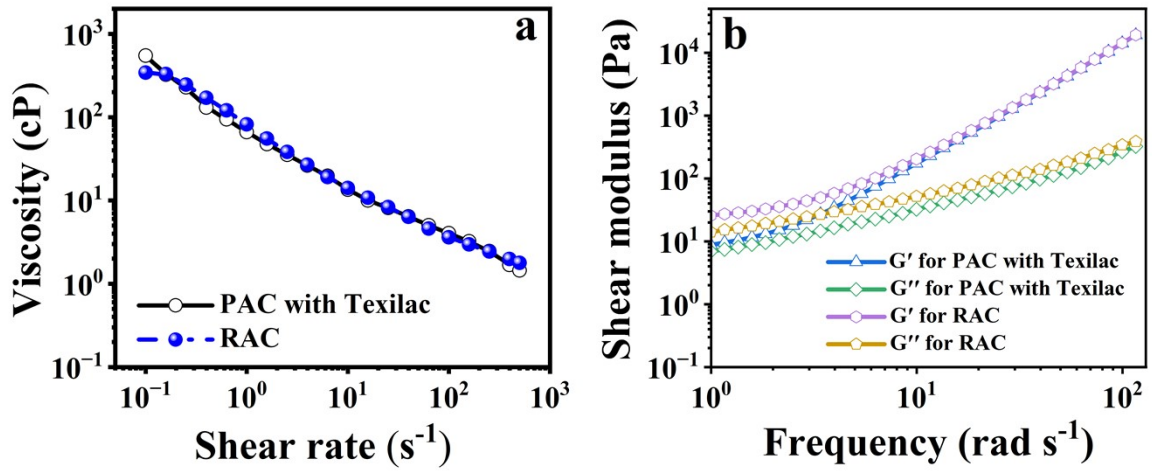

Fig. S2 (a) shows the variation in apparent viscosity of the electrode inks as a function of shear rate and (b) presents the dependence of their storage modulus (G′) and loss modulus (G″) on frequency.

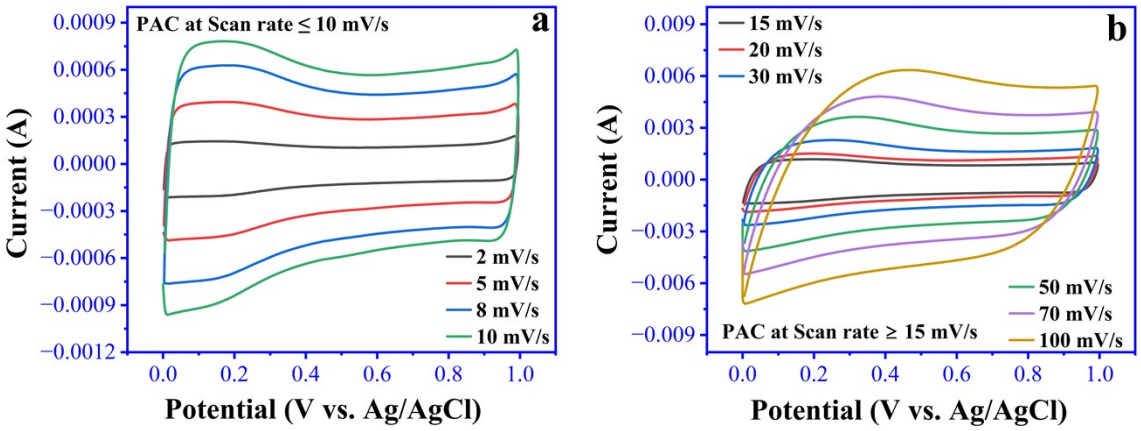

Fig. S3. Cyclic voltammetry curves at scan rates of (a) ≤ 10 mV/s and (b) ≥ 15 mV/s for PAC electrode.

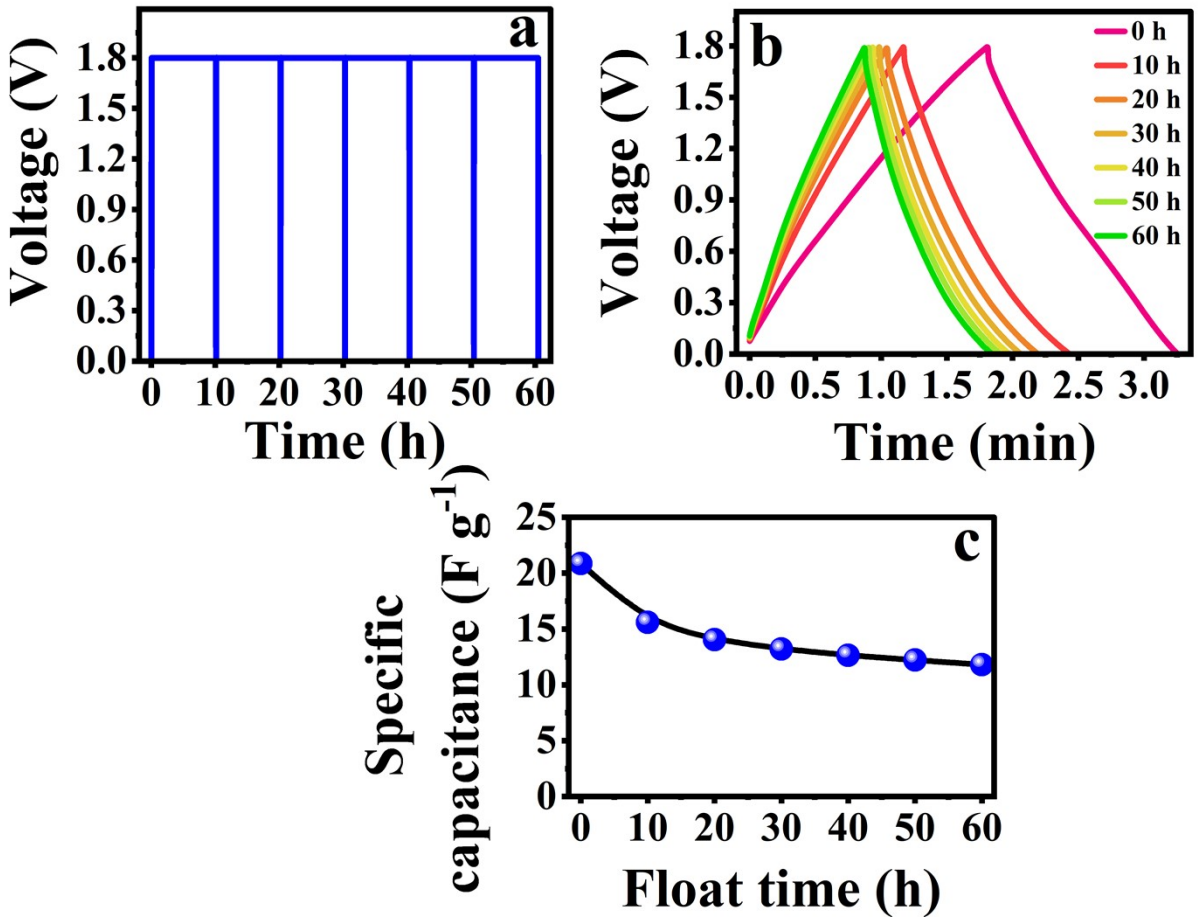

Fig. S4 (a) GCD profiles of the RAC device recorded over a floating duration of 0-60 h, (b) corresponding GCD curves obtained at 10 h intervals, and (c) variation in specific capacitance as a function of floating time.

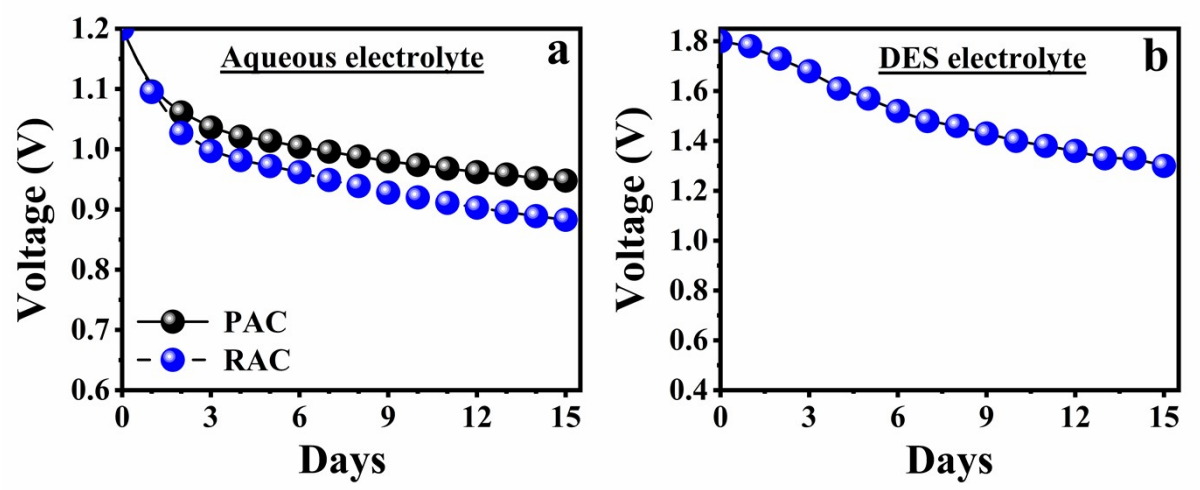

Fig. S5. Self-discharge behavior of the fabricated supercapacitors: (a) in aqueous electrolyte and (b) in deep eutectic solvent (DES) electrolyte.

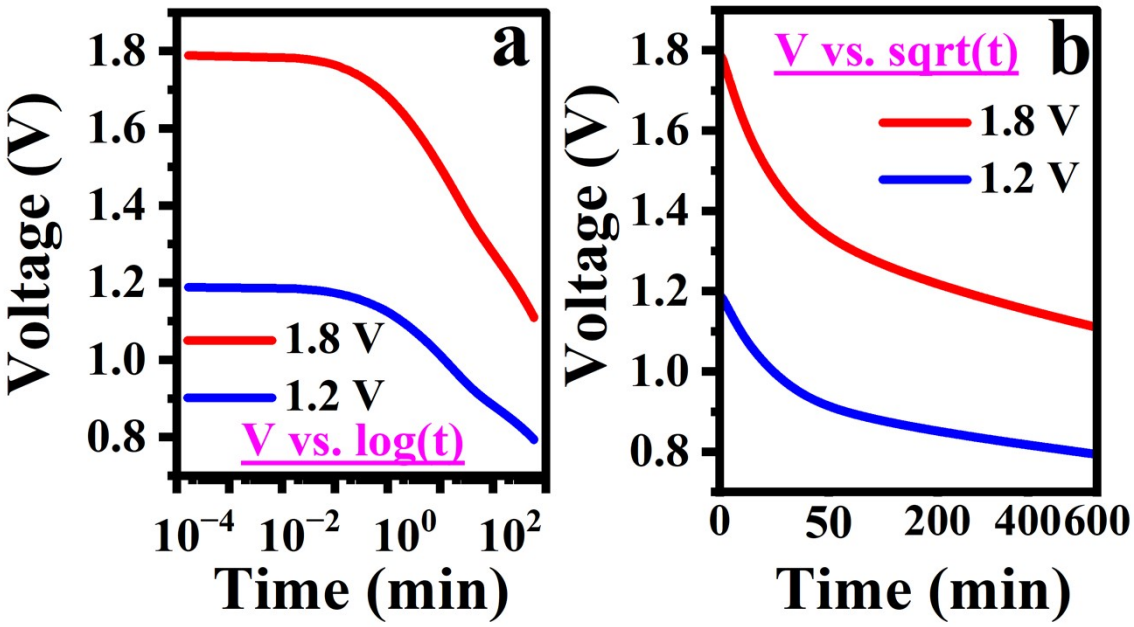

Fig. S6. Self-discharge profiles from 1.2 V and 1.8 V initial voltage, plotted using (a) logarithmic and (b) square root normalised time axes.

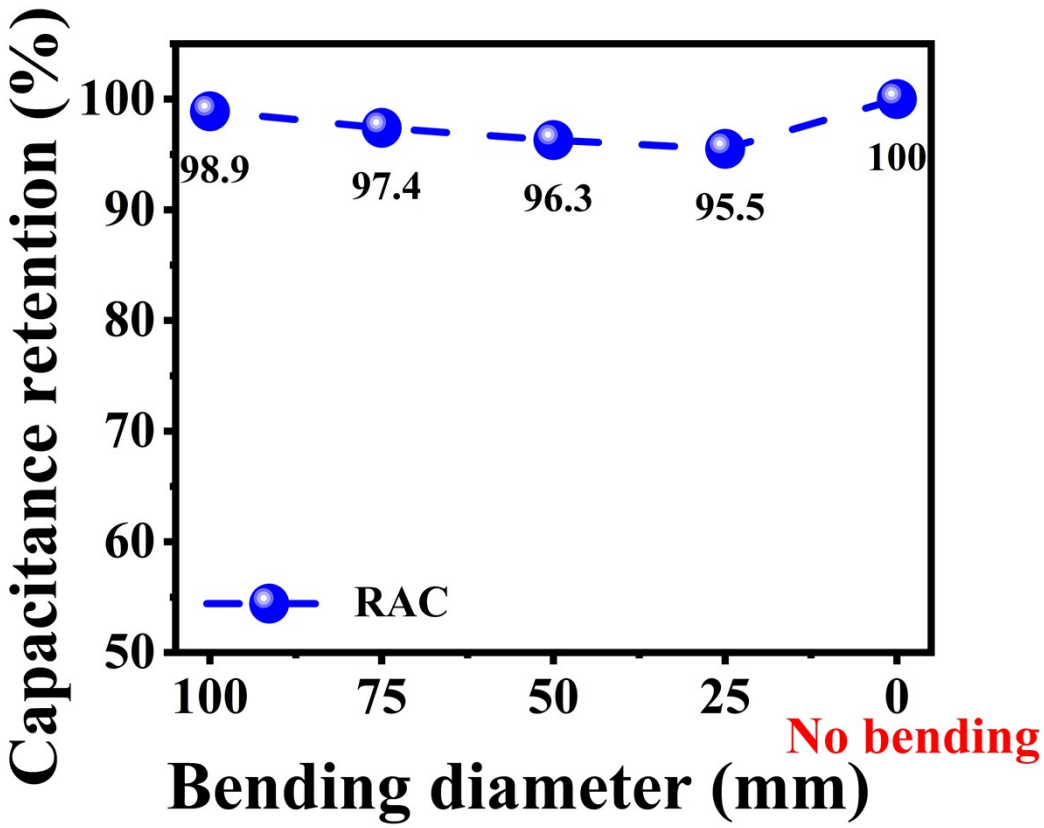

Fig. S7. Retention of capacitance performance during different bending states.