Supporting Information for

A Study on the Preparation of Polycation Gel Polymer Electrolyte for Solid-State Supercapacitors

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Table S1. The ionic conductivity of reported hydrogels [1-9] and PGPE of this work.

Sample	Conductivity (mS cm^{-1})	Temperature	Ref.
PAMPS/PAA	3.34	RT	1
PAAm/Gelatin (15%Na_3Cit)	15	RT	2
PAM-AA/CNF/Fe^{3+} (1.5%LiCl)	22	RT	3
Chitosan+poly(diallyldimethylammonium chloride) (KOH)	24	30 ℃	4
PVA (H_3PO_4)	34	30 ℃	5
P(NVP-co-DMDAAC)/PVA (KOH)	36.6	25 ℃	6
B-PVA (GO + KCl)	47.5	RT	7
This work	57.6	25 ℃	
C_3(Br)DMAEMA/PEGMA (Li_2SO_4)	66.8	25 ℃	8
Carboxylated chitosan (HCl)	86.9	RT	9

Table S2. Polymer system optimization.

$(EO)_6(Cl)$DMAEMA : PEGMA(mass ratio)	Li_2SO_4/H_2O (mol L^{-1})	Conductivity (mS cm^{-1})	Mechanical properties
7:3	0.5	47.8	A little brittle
	1	50.4	A little brittle
	1.5	40.2	Brittle
	2	38.0	Brittle
8:2	0.5	53.3	Stretchable
	1	57.6	Stretchable
	1.5	47.5	A little hard
	2	45.1	Hard
9:1	0.5	52.7	Stretchable
	1	56.4	Stretchable
	1.5	44.9	Hard
	2	43.5	Hard

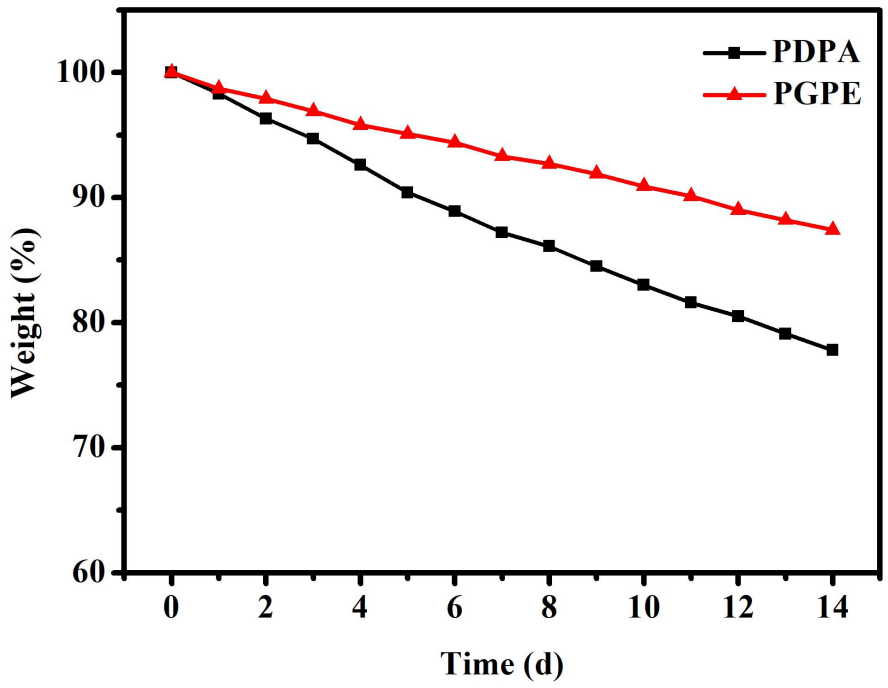

Figure S1. The liquid conservation rate of PGPE and PDPA within 2 weeks.

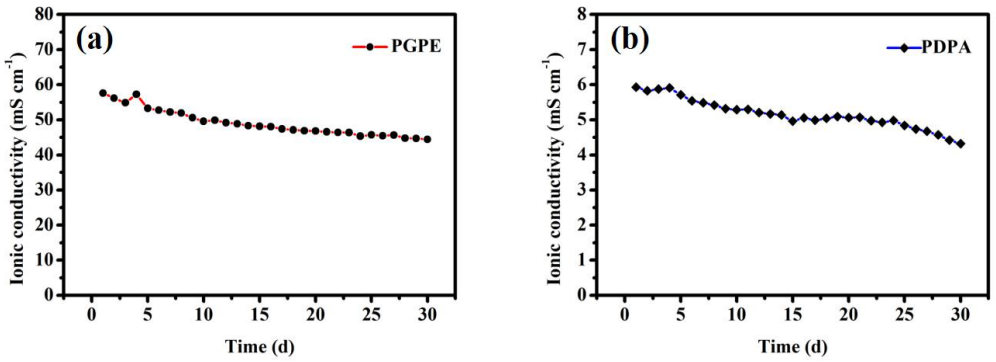

Figure S2. (a) Curve of ionic conductivity of PGPE within 30 days; (b) Curve of ionic conductivity of PDPA within 30 days.

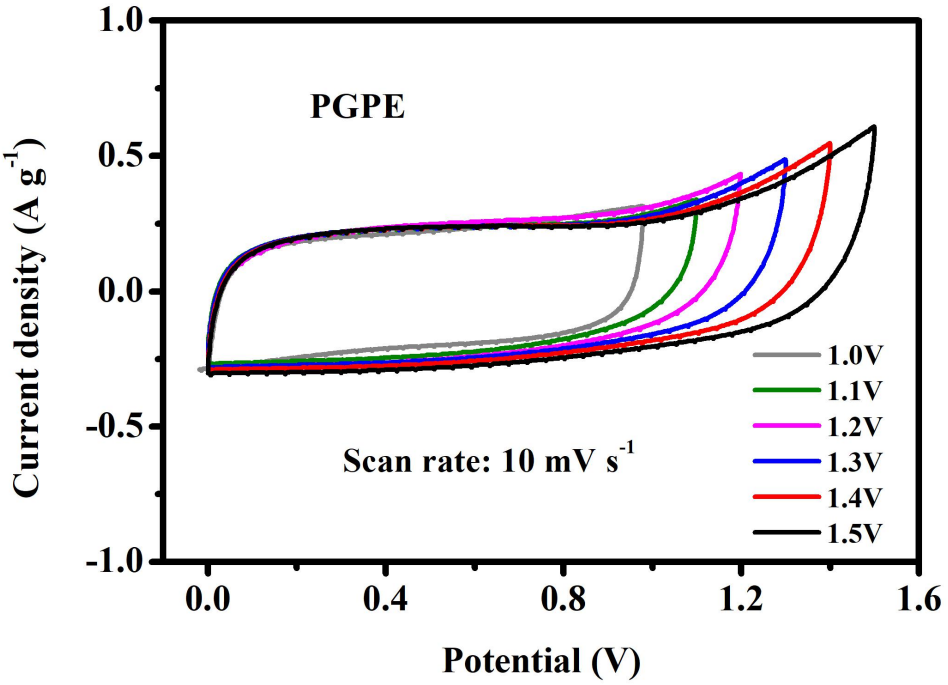

Figure S3. The potential window of PGPE SC.

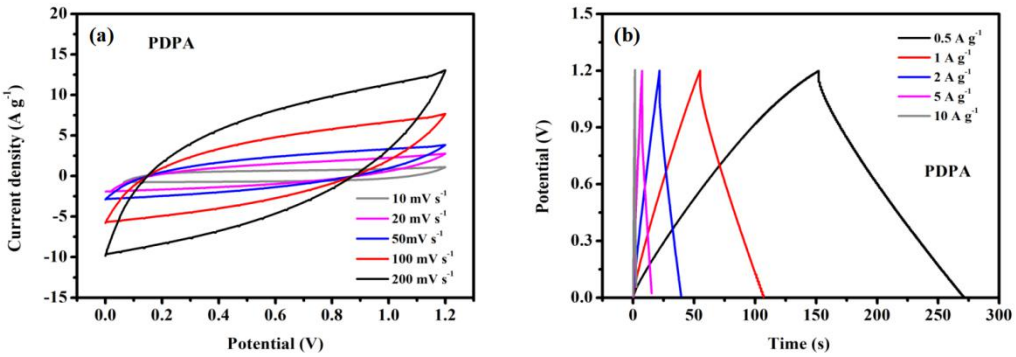

Figure S4. (a) CV curves of PDPA SC (scan rate from 10 mV s^{-1} to 200 mV s^{-1}). (b) GCD curves of PDPA SC (current densities from 0.5 A g^{-1} to 10 A g^{-1}).

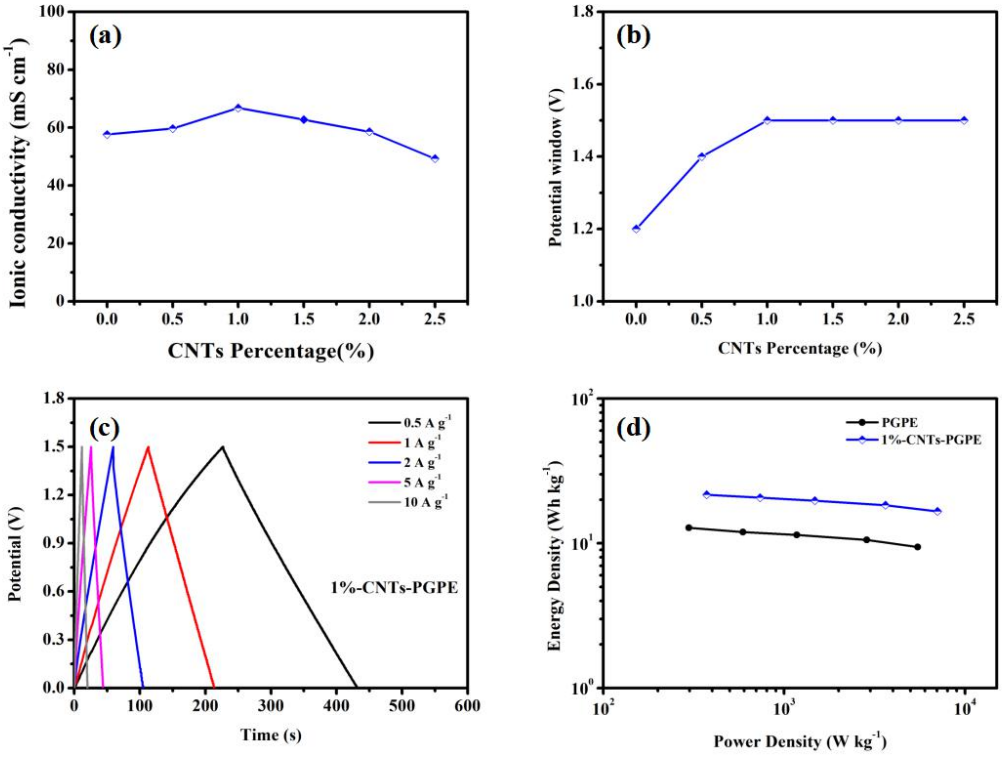

Figure S5. (a) The ionic conductivity of PGPE with different CNTs content at 25 °C. (b) The potential window of PGPE SC with different CNTs content. (c) GCD curves of PGPE SC and 1%-CNTs-PGPE SC at different current densities (from 0.5 to 10 A g-1). (d) Ragone plots of PGPE SC and 1%-CNTs-PGPE SC.

References

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