Supporting Information

A Flexible Polypyrrole/GelMA Self-supported Electrode for Supercapacitors by Confined Interfacial Electrodeposition

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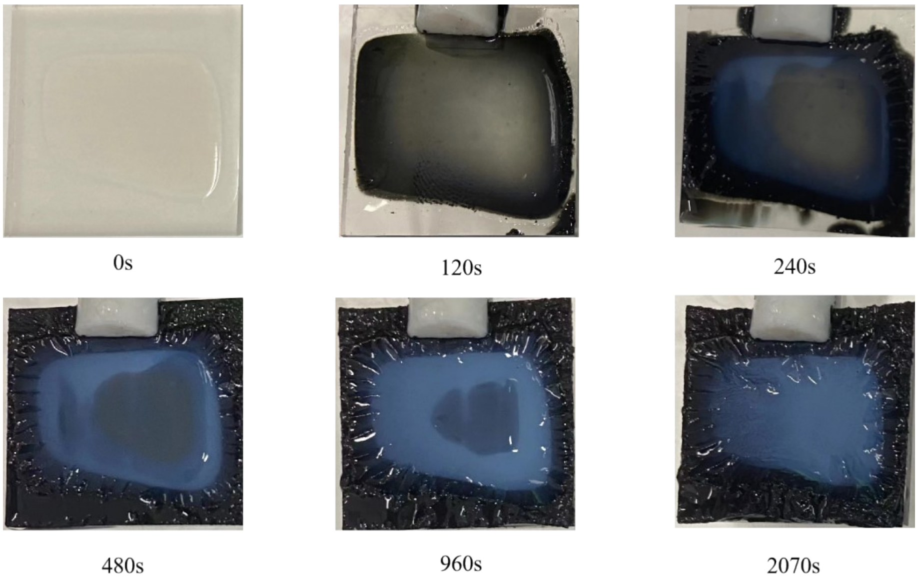

Figure S1. The photo of PPy/GEL films with different deposition time.

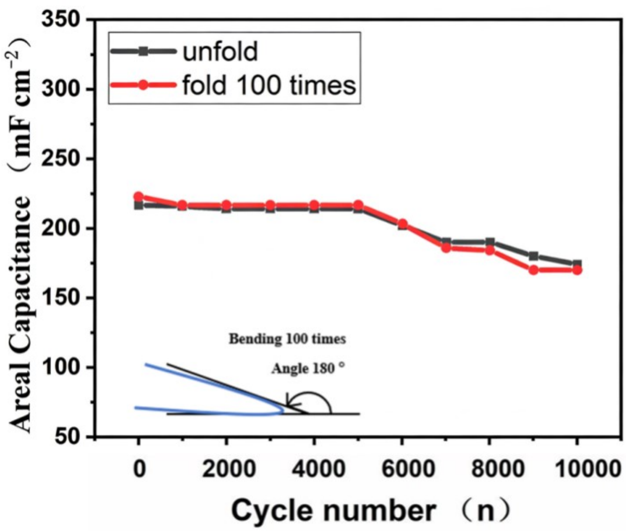

Figure S2. Long cycling performance of PPy/GEL-4800s electrode before and after 100 times 180° folding.

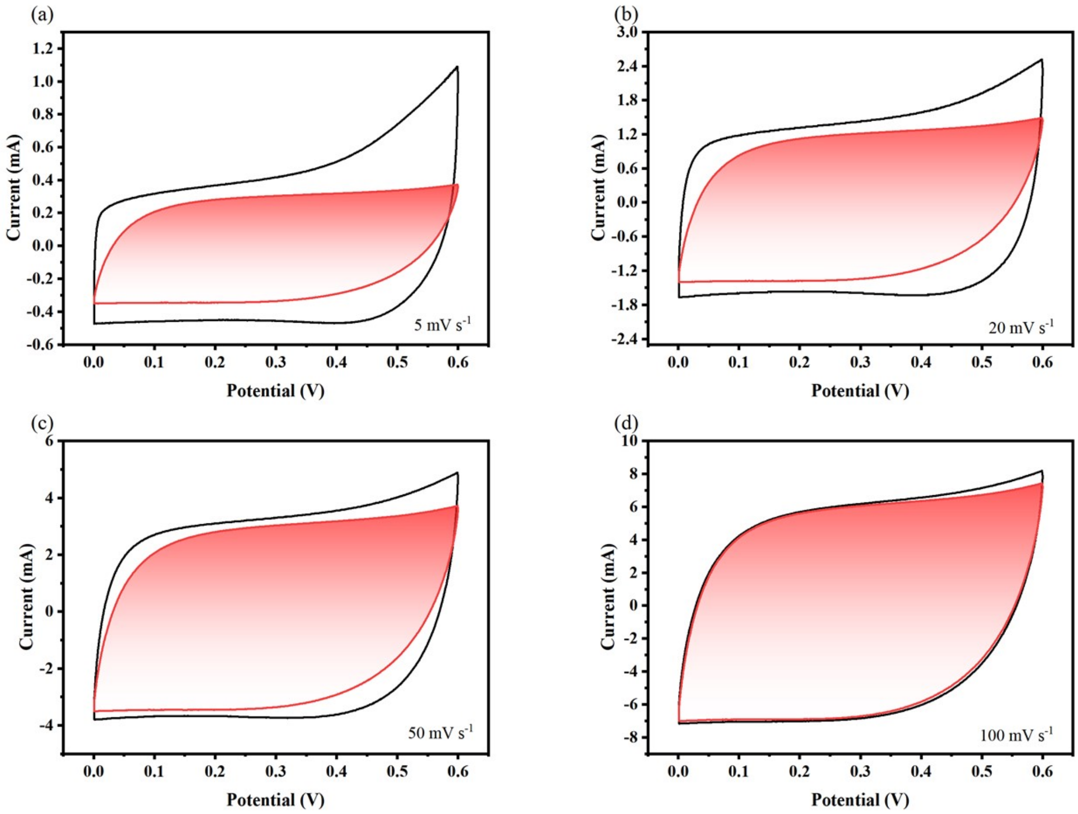

Figure S3. Pseudocapacitance fraction of (a) 5mV s^{-1},(b) 20mV s^{-1},(c) 50mV s^{-1} and (d) 100 mV s^{-1}

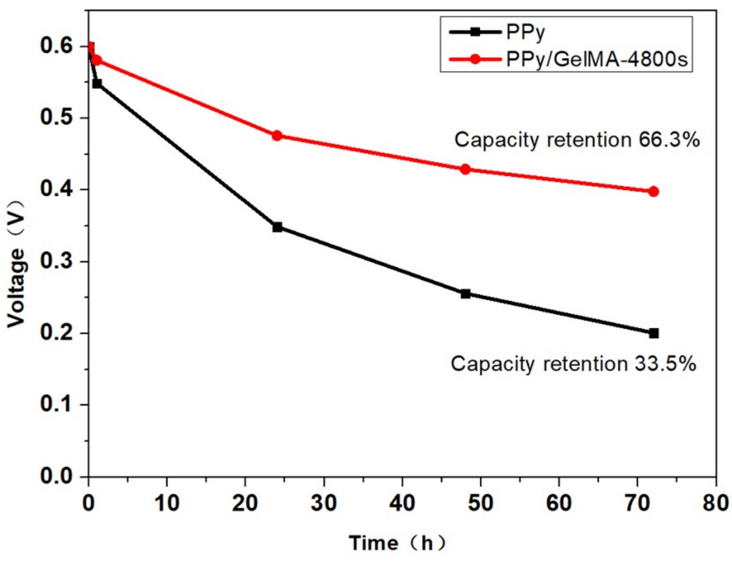

Figure S4. The self-discharge process of PPy and PPy/GelMA-4800s samples during 3 days.

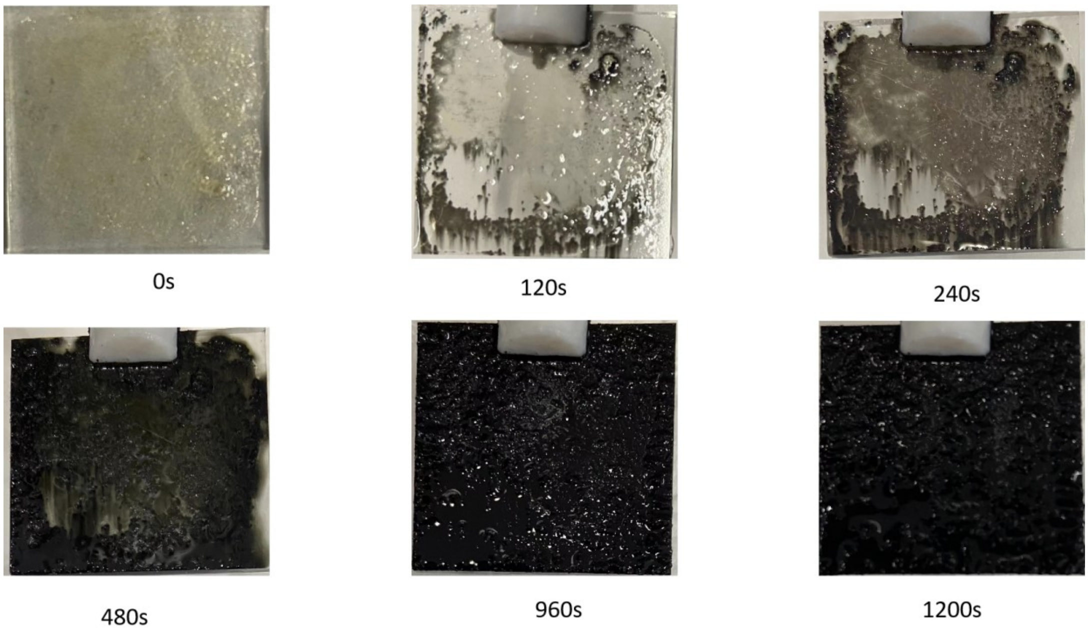

Figure S5. Pictures of PPy/GEL films containing Py in gelatin at different interfacial deposition time.

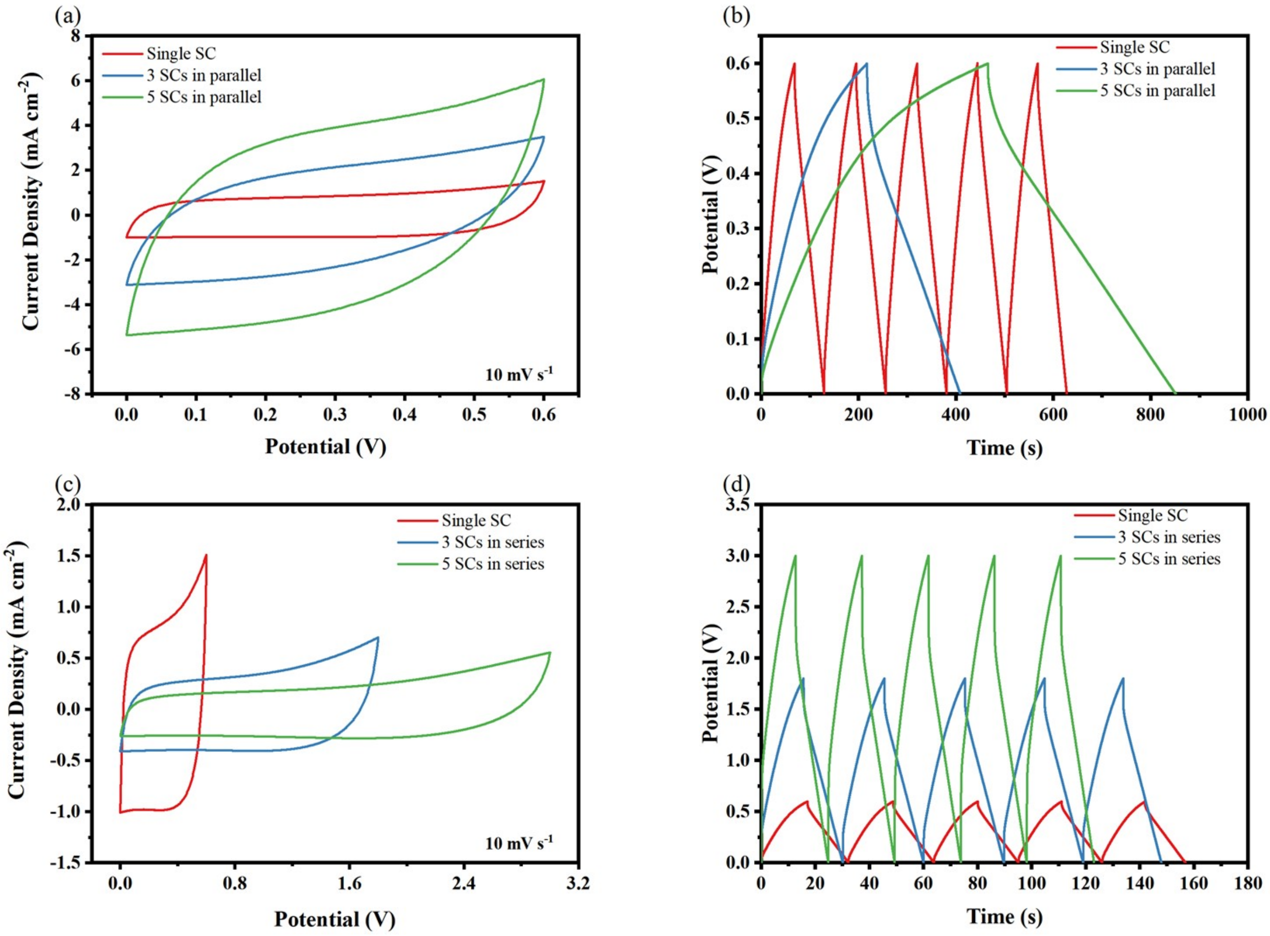

Figure S6. Scalability tests of supercapacitors made of PPy/GEL. (a) CVs of 1,3 and 5 supercapacitors in parallel. (b) GCDs of 1,3 and 5 supercapacitors in parallel. (c) CVs of 1,3 and 5 supercapacitors in series. (d) GCDs of 1,3 and 5 supercapacitors in series.

Figure S7. The 1.5V sign can be lit by connecting multiple PPy/GEL SCs in series.

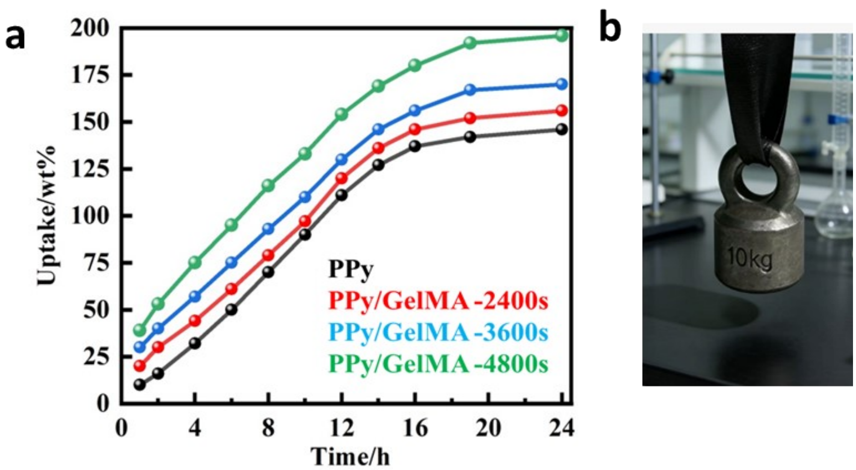

Figure S8. (a) The swelling ratio of PPy films and (b) the PPy composite film can suspend a weight of 20 kilograms.

Supporting Tables

Table S1 Conjugation Length and Conductivity of PPy/GEL and PPy

Name	I_{1580}/I_{1500}	electric conductivity
PPy/GEL-6000s	3.349	10.314
PPy/GEL-4800s	3.346	10.389
PPy/GEL-3600s	2.648	4.917
PPy/GEL-2400s	2.482	2.597
PPy	3.313	5.473

Table S2 The equivalent series resistance and charge transfer resistance of PPy/GEL SCs in different deposition time

Name	R_s	R_{ct}
PPy/GEL-6000s	0.963	21.823
PPy/GEL-4800s	0.803	7.127
PPy/GEL-3600s	0.529	7.948
PPy/GEL-2400s	0.329	11.3154
Pure PPy	1.11	120.572

Table S3 Comparison of the performance of PPy/GEL-4800s SC with the performance of other conductive polymer supercapacitors

Supercapacitor	Capacitance (mF cm^{-2})	Current density (mA cm^{-2})	Energy density (μWh cm^{-2})	Power density (μW cm^{-2})	Ref.
PPy/GEL-4800s SC	**260**	**1**	**13**	**600**	**This work**
PPy/l-Ti_3C_2	35.6	0.3	NA	NA	[1]
SiC@PANI	47.48	0.5	6.59	250	[2]
$Ti_3C_2T_x$-PANI @CNTs	78.2	0.1	2.72	50	[3]
PPy/CNTs	94.7	0.1	32.8	20	[4]
Si/PM/rGO-PsAg	100.98	1.5	3.4	2652	[5]
PEDOT/CNTs	128	1	3.6	200	[6]
TF-PPy/Cu-TCPP	160	0.2	2.28	50	[7]
EG-PME-PPy	212	0.8	9.4	319.5	[8]
rGO/PPy	222	0.2	10	5000	[9]

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