Electronic Supplementary Material (ESI) for Sustainable Energy & Fuels.

Supporting Information

A facile approach on Saccharum spontaneum derived porous carbon-based supercapacitor for excellent energy storage performance in redox active electrolyte

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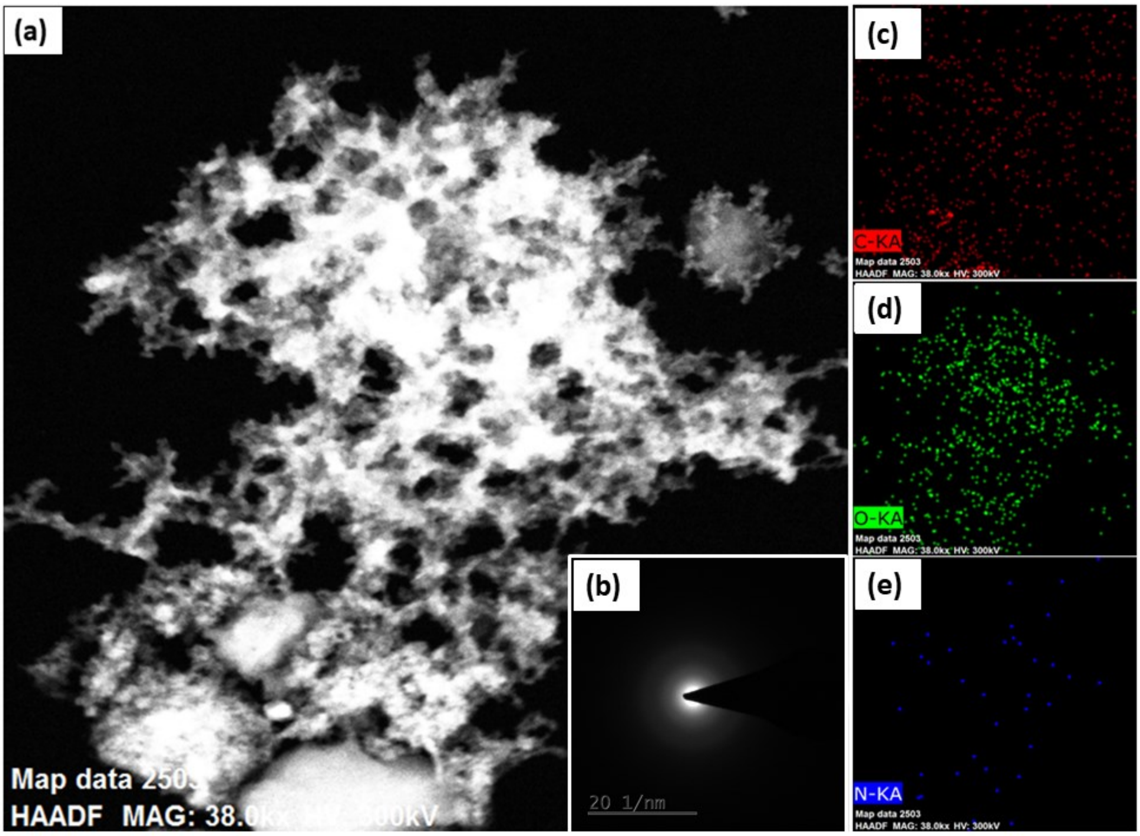

Figure S1. (a) Selected area of TEM image (b) SAED pattern of SZE2-600 and its elemental mapping for (c) C, (d) O and (e) N atoms.

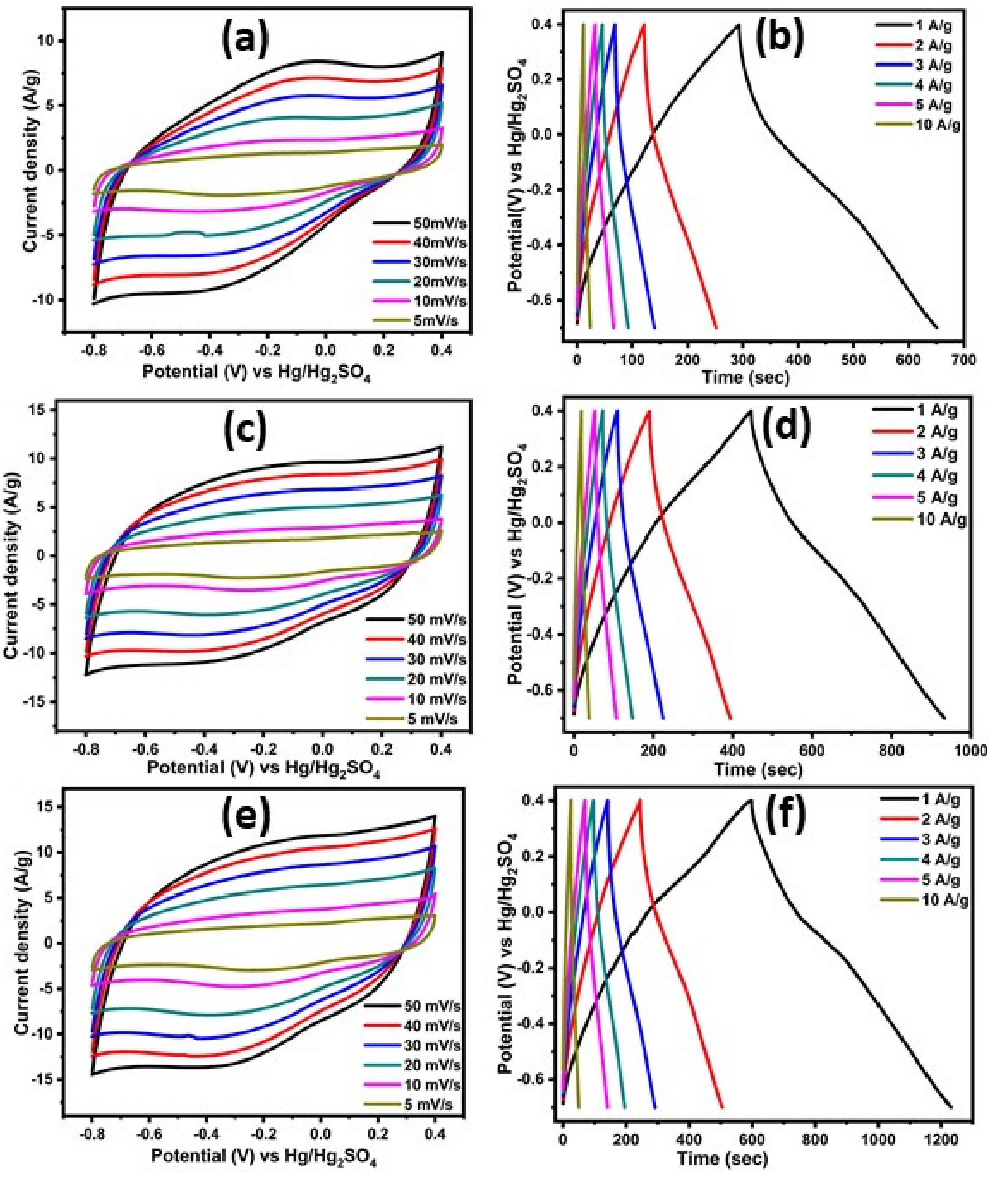

Figure S2. CV and CD profile of (a-b) SZE2-500 , (c-d) SZE2-700 and (c-d) SZE2-800 sample at different scan rates and current densites, respectively.

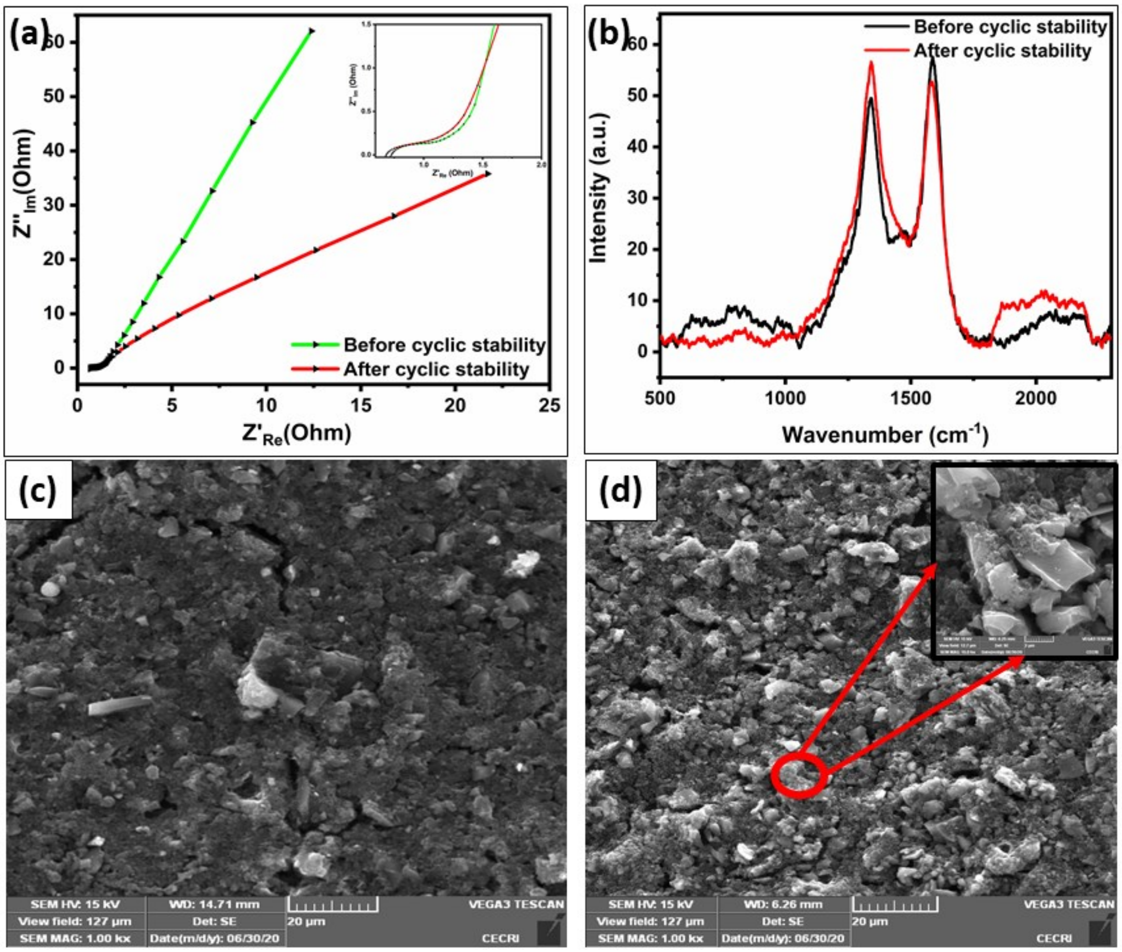

Figure S3. (a) Nyquist plot and (b) Raman spectrum of SZE2-600 electrode before and after 1000 cycles; SEM image of SZE2-600 electrode (c) before and (d) after cyclic stability test.

Table S1. The measured specific surface areas, pore volume and pore diameter of the samples.

Sample	BET specific surface area (m^2/g)	Pore volume (cm^3/g)	Pore diameter (nm)
SZE2-500	828	0.743	3.7944
SZE2-600	1590	0.895	1.656
SZE2-700	1046	0.585	1.656
SZE2-800	1128	0.618	1.688

Table S2. The specific capacitance value for all the samples.

Materials	Specific capacitance (F/g)					
	1 A/g	2 A/g	3 A/g	4 A/g	5 A/g	10 A/g
SZE2-500	**414**	**336**	**289**	**248**	**211**	**155**
SZE2-600	**561**	**524**	**469**	**425**	**382**	**280**
SZE2-700	**444**	**371**	**311**	**273**	**245**	**173**
SZE2-800	**547**	**476**	**409**	**364**	**322**	**218**

Table S3. Comparison table for suitability of present work for supercapacitor application in two-electrode configuration.

Carbon source	SSA (m^2/g)	Electrolyte	Current density	Sp. Cap. (F/g)	Energy density (Wh/kg)	Power density (W/kg)	Ref.
Willow wood	2800	6 M KOH	1 A/g	197	23	10000	1
Sisal fibre	2289	6 M KOH	0.5 A/g	146	11.9	5000	2
Rice husk	3619	6 M KOH	0.2 A/g	205	7.1	103.2	3
Carbon aerogels	1681.6	0.5 M H_2SO_4	0.5 A/g	198	26.2	1000	4
Lignin rich residue	2182	1 $TEABF_4$ in ACN	1 mA/cm^2	132	33.4	7400	5
Hybrid willow	2536	6M KOH	0.1 A/g	162.3	17.5	209	6
Chestnut shell	1987	6M KOH	0.1 A/g	105.4	-	-	7
White sugar	717.1	1M Na_2SO_4	1 A/g	242.67	19	750	8
Laminaria japonica	2000	6M KOH	1 A/g	248	8.6	500	9
Chestnut shell	1347.9	1M H_2SO_4	0.5 A/g	201	-	-	10
Carbon aerogels	1101	0.5 M H_2SO_4	0.2 A/g	124.4	4.32	100	11
Sulphur doped waste tea	771	6M KOH	1 A/g	144.7	20.1	-	12
Paulownia flower	1159	6M KOH	1 A/g	297	22.2	247	13
N, B doped bamboo	171.5	1M H_2SO_4	0.2 A/g	318	42.1	95	14
Shiitake mushroom	2988	6M KOH	0.2 A/g	238	8.2	100	15
Saccharum Spontaneum	**1719**	**1M H_2SO_4**	**1 A/g**	**275**	**13.2**	**5607**	**This work**

SSA - Specific Surface Area; Sp. Cap. – Specific Capacitance; Ref. - Reference

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