Electronic Supplementary Information (ESI)

Silica-assisted bottom-up synthesis of graphene-like high surface area carbon for highly efficient ultracapacitor and Li-ion hybrid capacitor applications.

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Table S1 C/O atomic ratio comparison of BTCADC and A–BTCADC with RGO based materials.

Sr. No.	Materials (Form)	C/O ratio	Refs.
1	Reduced GO (Powder)	~10.3	3
2	$NaBH_4$ reduced GO (Powder)	~8.6	34
3	Hydrazine vapor reduced GO (Film)	~8.8	35
4	Vitamin C reduced GO (Film)	~12	14
5	Hydro Iodic Acid Reduced (Film)	~14.9	36
6	RGO (This work)	~10	This Work
7	BTCADC (This work)	~19	This Work
8	A–BTCADC (This work)	~18	This Work

Table S2 XPS fitting results of C 1s spectra for RGO, BTCADC, and A–BTCADC.

Sr. No.	Materials	C=C + C-C	C-O	C=O	O-C=O
1	RGO	70.4 + 13.01 = 83.41	6.45	5.15	4.96
2	BTCADC	81.54 + 9.40 = 90.94	4.92	2.64	1.41
3	A–BTCADC	79.1 + 11.7 = 90.80	4.97	2.62	1.51

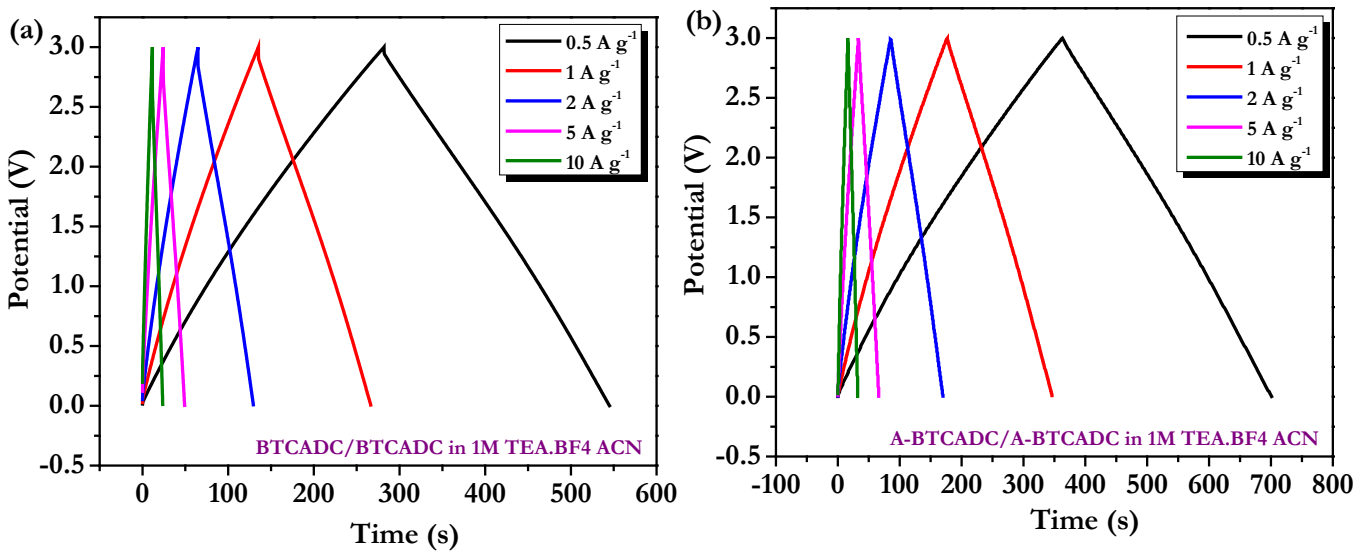

Figure S1. Typical galvanostatic charge-discharge curves of (a) BTCADC and (b) A–BTCADC based electrodes in symmetric supercapacitor configuration in 1M $TEABF_4$. ACN at various current densities. Here the current density is based on the total mass loading of the electrodes.

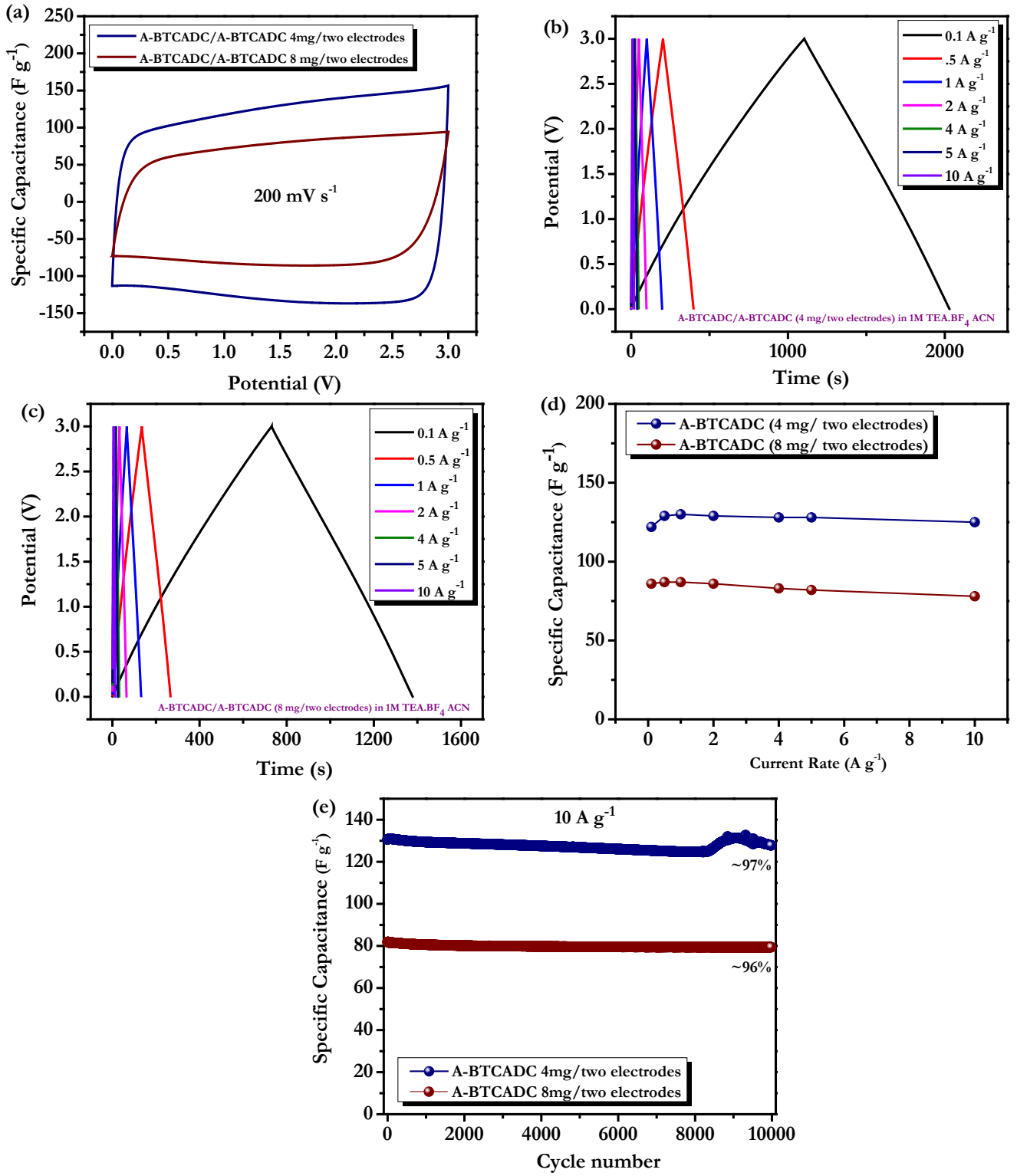

Figure S2. (a) Comparison of cyclic voltammograms traces for A–BTCADC electrodes with higher loadings (4 mg and 8 mg per two electrodes) at the scan rate of 200 mV s^{-1}(C_{sp} *vs.* potential plot); (b) Galvanostatic charge–discharge plots for A–BTCADC (4 mg/ two electrode cell) at various current rates; (c) Galvanostatic charge–discharge plots for A–BTCADC (8 mg/ two electrode cell) at various current rates; and (d) Cycle stability plots (C_{sp} *vs.* cycle number) for A–BTCADC bases cells at 10 A g^{-1} in 1M TEA.BF_4.ACN between 0 – 3V.

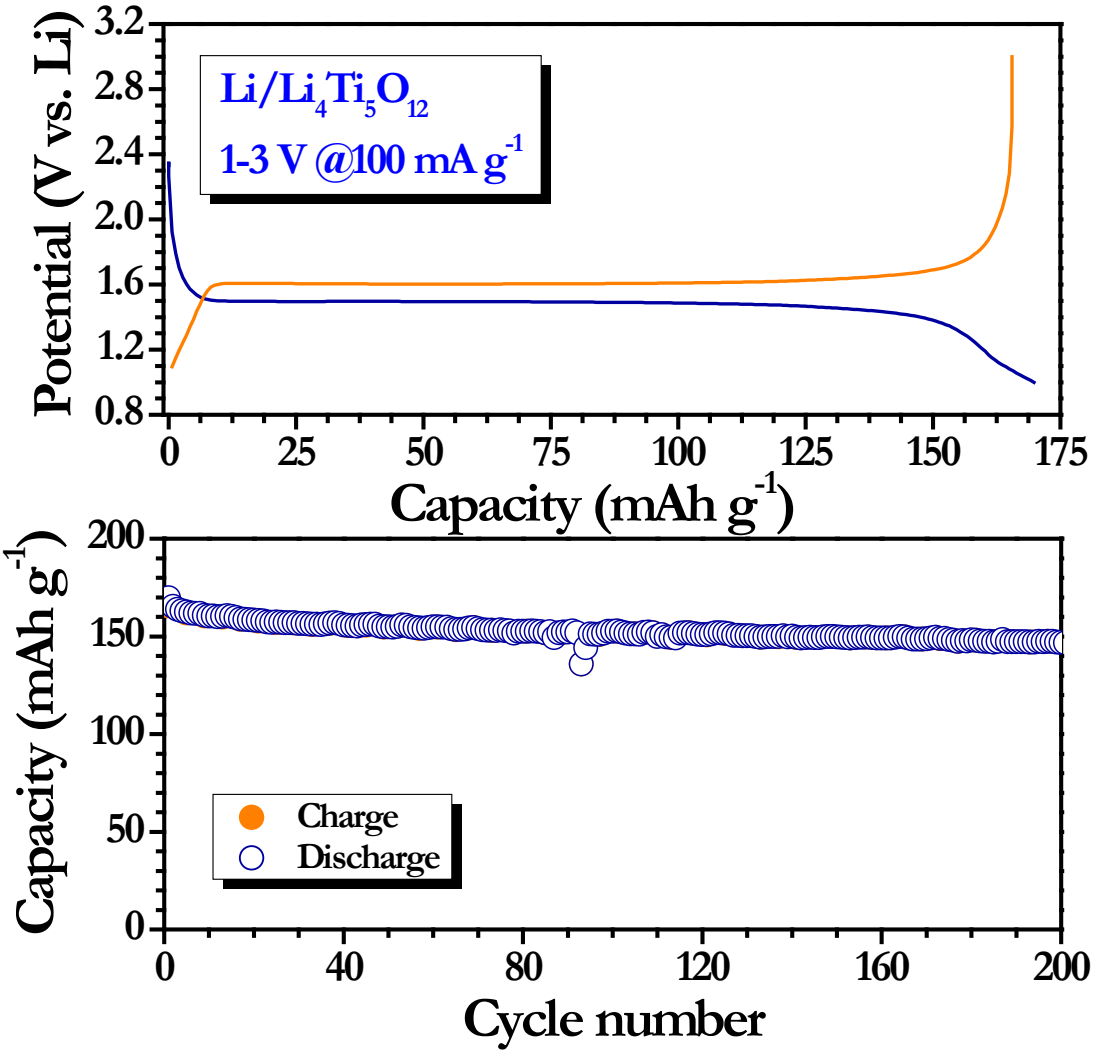

Figure S3. Galvanostatic charge-discharge curves of $Li/Li_4Ti_5O_{12}$ (Aldrich, USA) cell cycled between 1-3 V at constant current density of 100 mA g^{-1} in 1M $LiPF_6$, and (b) Plot of discharge capacity *vs.* cycle number.

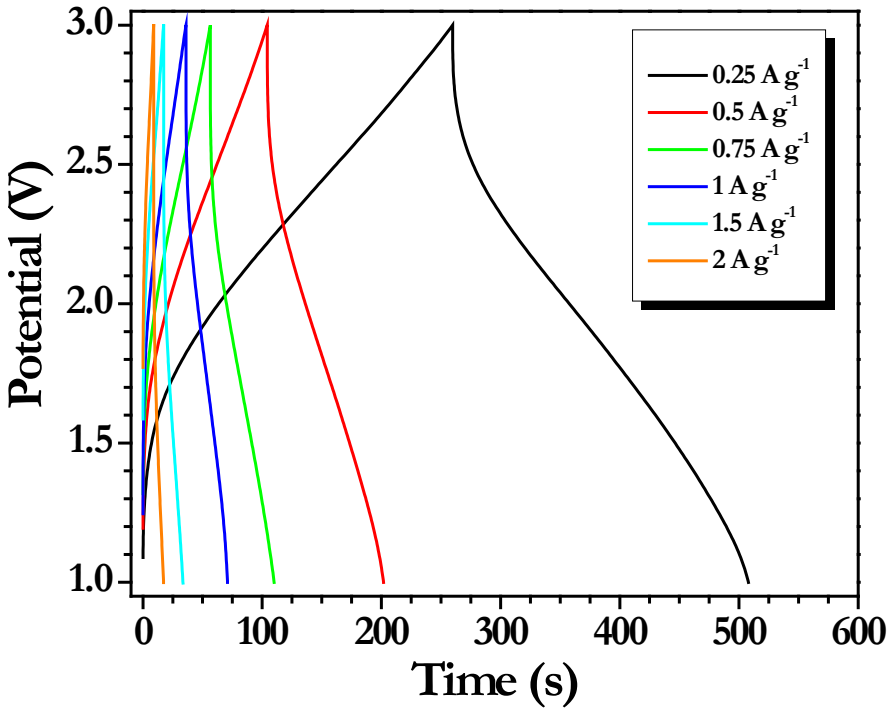

Figure S4. Galvanostatic charge-discharge profiles of commercially available activated carbon (CAC)/ $Li_4Ti_5O_{12}$ Li-HEC tested between 1-3 V at various current densities in 1M $LiPF_6$.