Electronic Supporting Information (ESI)

Facile Synthesis of Mesoporous Carbon Spheres Using 3D Cubic Fe-KIT-6 by CVD Technique for the Application of Active Electrode Materials in Supercapacitors

Govindarasu Gunasekaran Karthikeyan†, Ganesan Boopathi ‡ and Arumugam Pandurangan*,†

† *Department of Chemistry, Anna University, Chennai 600025, Tamil Nadu, India*

‡ *Laboratory of Experimental and Applied Physics, Centro Federal de Educação Tecnológica Celso Suckow da Fonseca, Av. Maracanã 229, Rio de Janeiro 20271-110, Brazil*

**E-mail:pandurangan_a@yahoo.com.*

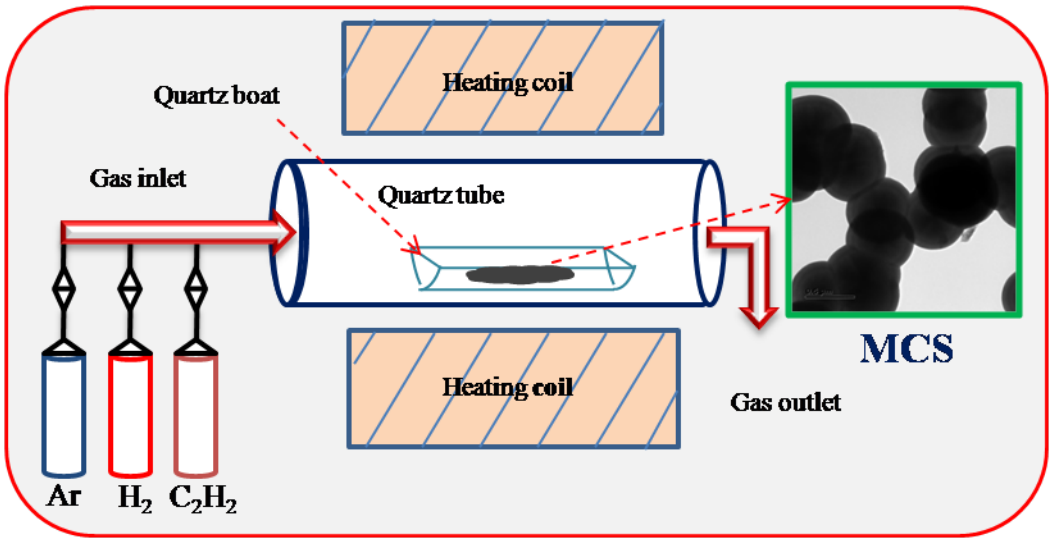

Figure S1 Schamatic representation of CVD synthesis of MCS.

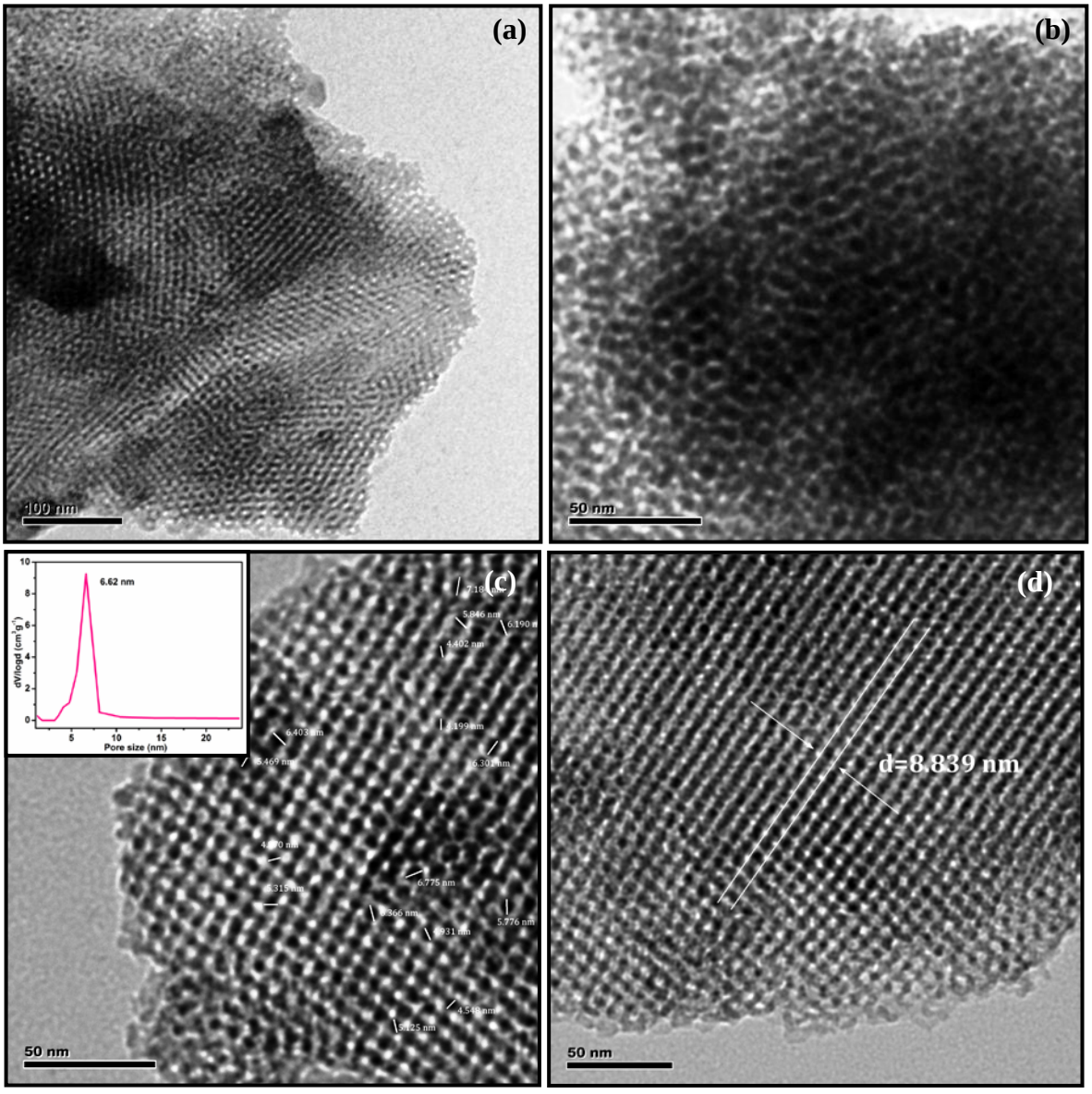

Figure S2 HRTEM images of 3D cubic structure of Fe-KIT-6 (a and b) at different magnifications; Average pore size of Fe-KIT-6 (c) and inset of (c) depicts the average pore size from N_2 adsorption/desorption; HRTEM image used for d-spacing measurement (d).

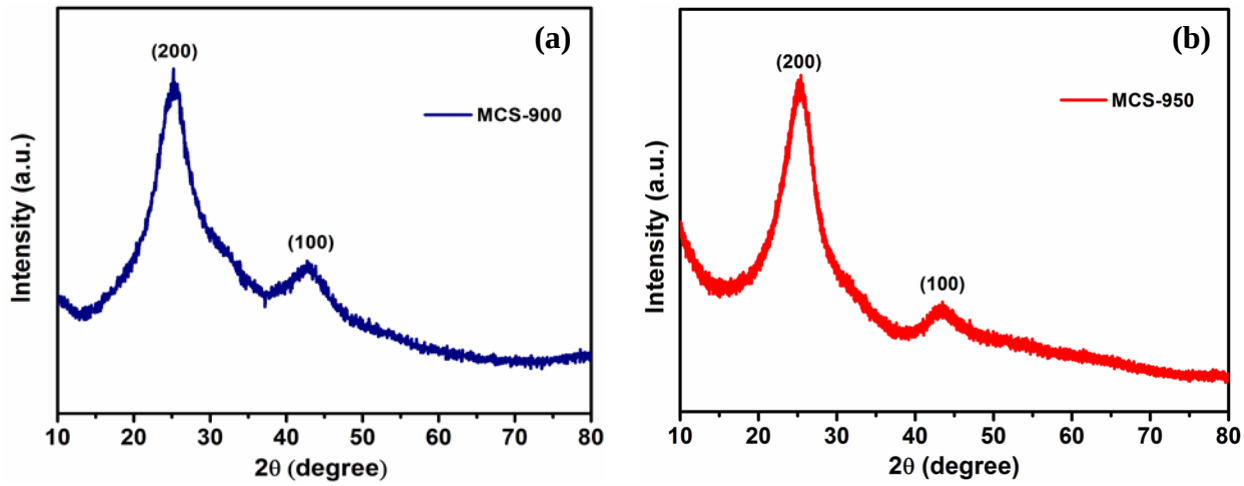

Figure S3 XRD spectrum of MCS-900 (a) and MCS-950 (b).

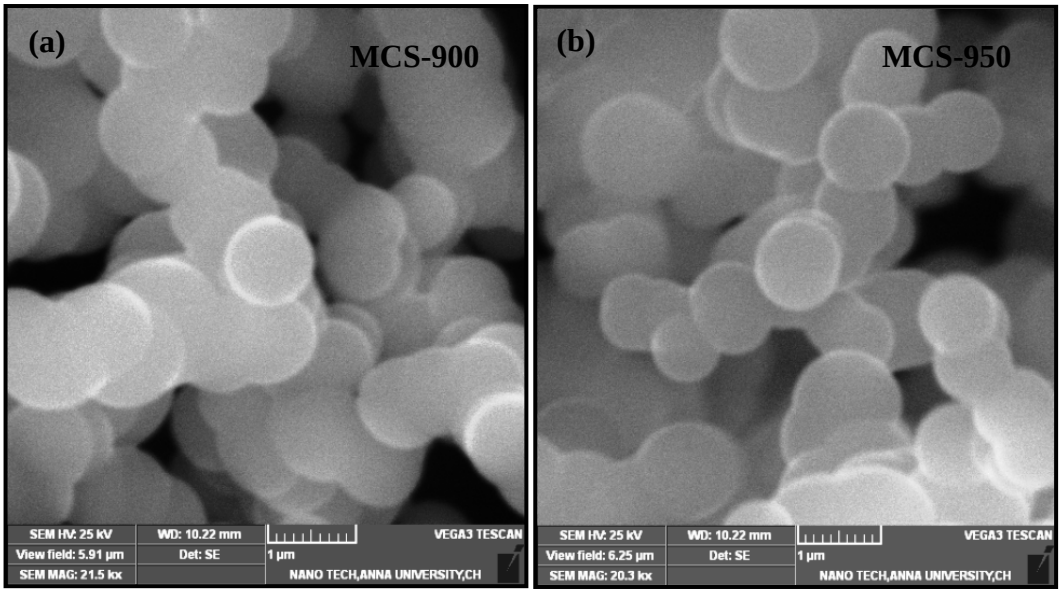

Figure S4 SEM images of MCS-900 (a) and MCS-950 (b).

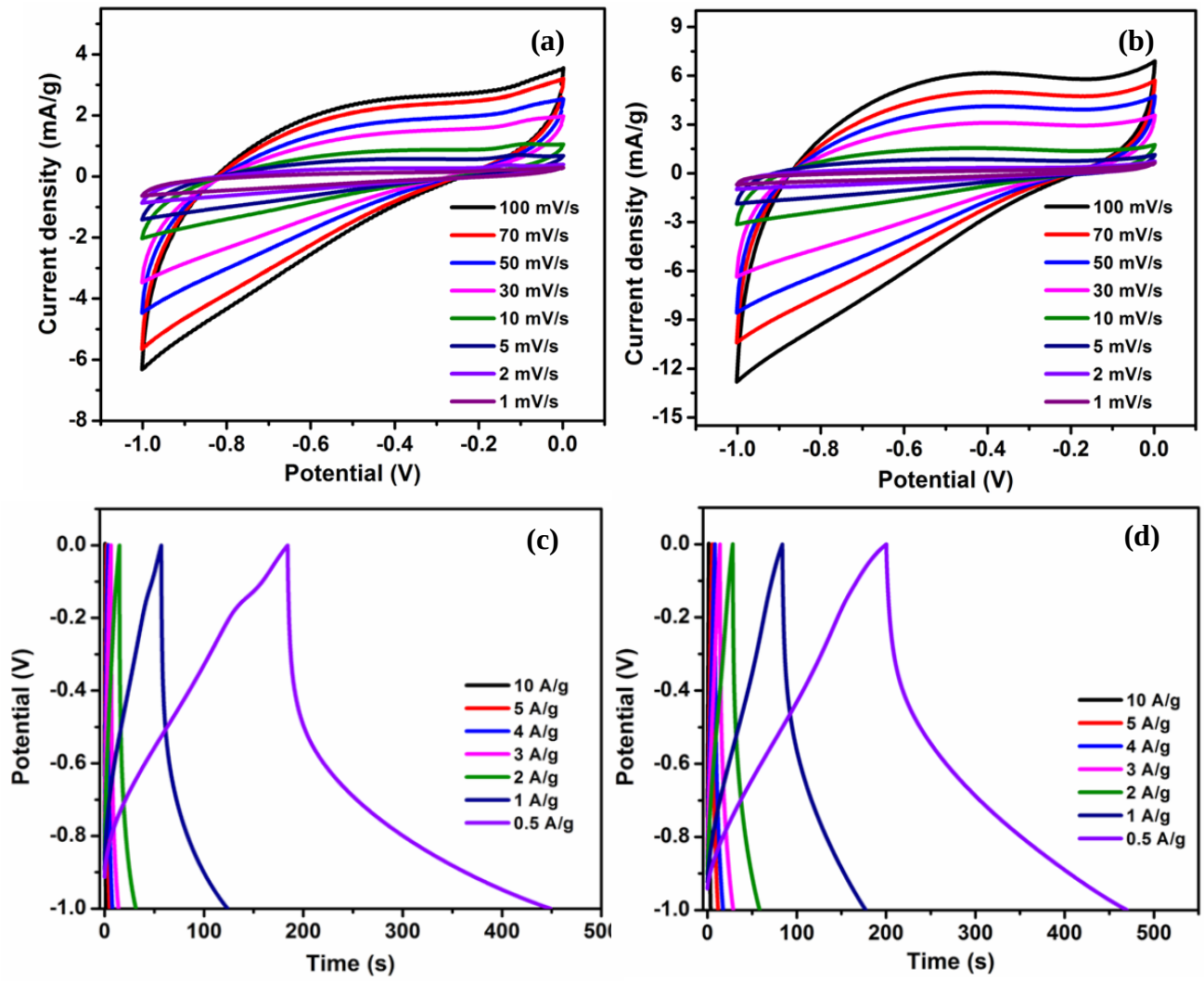

Figure S5 CV curves of MCS-750 (a) and MCS-800 (b) at various scan rates, GCD curves of MCS-750 (c) and MCS-800 (d) at various current densities.

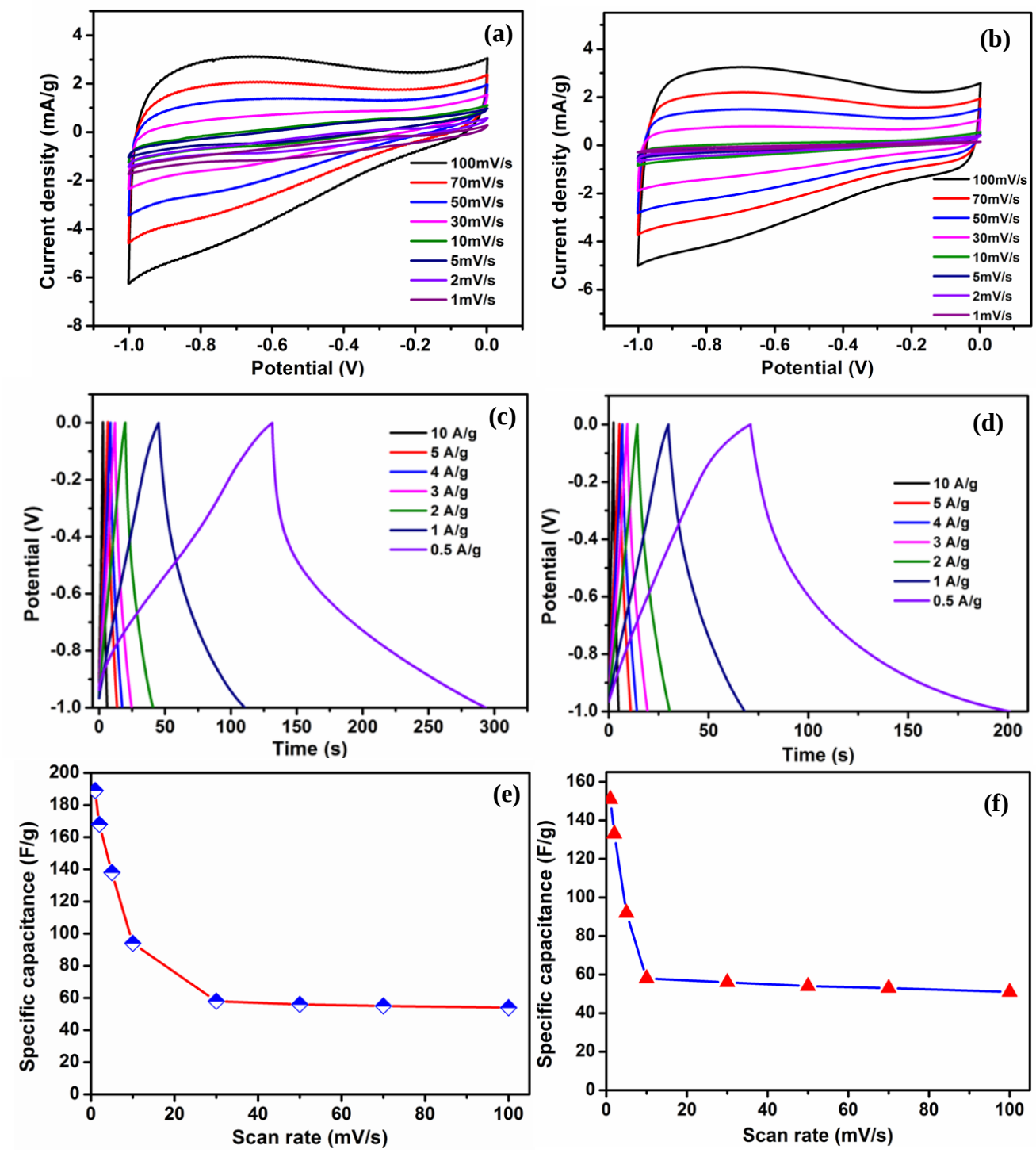

Figure S6 CV curves of MCS-900 (a) and MCS-950 (b) at different scan rates, GCD curves of MCS-900 (c) and MCS-950 (d) at various current densities, specific capacitance *vs*. scan rate of MCS-900 (e) and MCS-950 (f).

Table S1 Relative intensities (in terms of %) of different oxygen functionalities were estimated from XPS analysis.

Sample name	MCS-750 Rel. Int. (%)	MCS-800 Rel. Int. (%)	MCS-850 Rel. Int. (%)
C─C	65.3	58	40.6
C─O	13	16.6	30
C═O	9.3	11.6	19.5
O─C═O	12.2	13.5	9.7

Table S2 Specific capacitance measurement using CV and GCD curves of MCS-900 and MCS-950.

C_{sp} (from CV)								
Sample name	Scan rates (mV/s)							
	1	2	5	10	30	50	70	100
MCS-900	189	168	138	94	58	56	55	54
MCS-950	151	133	92	58	56	54	53	51
C_{sp} (from GCD)								
Sample name	Current densities (A/g)							
	0.5	1	2	3	4	5	10	
MCS-900	86	67	42	39	36	35	30	
MCS-950	65	38	35	34	32	31	30	

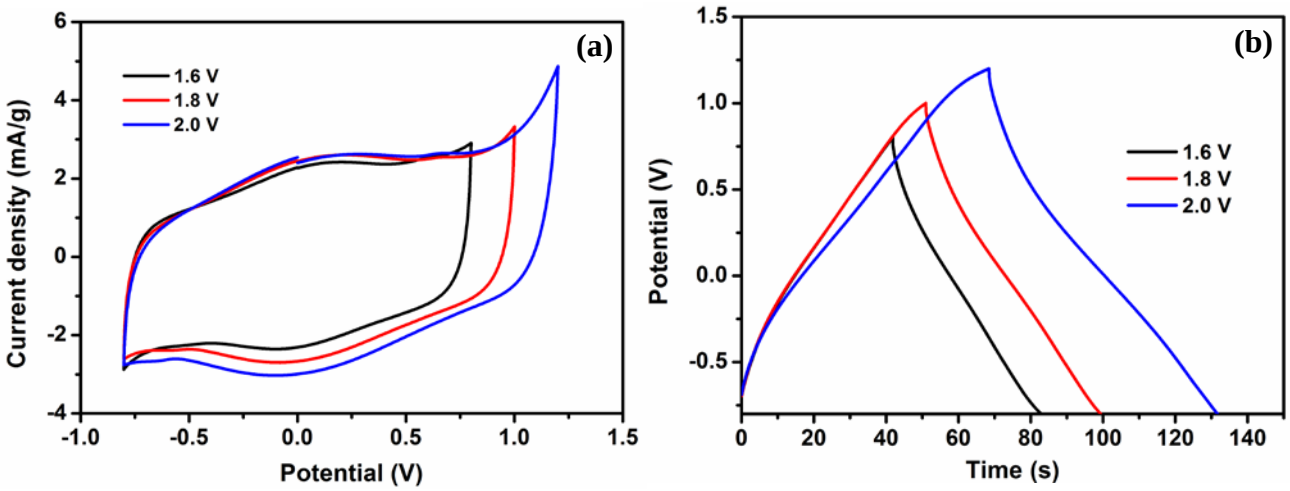

Figure S7 CV and GCD curves of symmetric device (a and b) at different potential windows.

Table S3 Interfacial electrochemical parameters of the prepared materials.

Sample name	$R_s(\Omega)$	$R_{ct1}(\Omega)$
MCS-750	0.57	1.96
MCS-800	0.54	2.59
MCS-850	0.67	0.69

Table S4 Specific capacitances of symmetric device derived from CV and GCD profiles.

Sample name	**C_{sp} (from CV)**					
Two-electrode symmetric cell (MCS-850)	**Scan rates (mV/s)**					
	5	**10**	**30**	**50**	**70**	**100**
	63	60	58	54	52	48
	C_{sp} (from GCD)					
	Current densities (A/g)					
	0.3		**0.5**	**1**		**5**
	63		56	50		23