Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

A Facile Drop-Casting Approach to Nanostructured Copper Oxide Painted Conductive Woven Textile as Binder-free Electrode for Improved Energy Storage Performance in Redox-additive Electrolyte

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Atom	**Site**	**x**	**y**	**z**	**Occ**
Copper (Cu)	4c	0.25	0.25	0.0	0.493
Oxygen (O)	4e	0.0	0.08479	0.25	0.525
Lattice Parameters			**R-Factors**		
a (Å)	4.685		R_{wp}	7.70	
b (Å)	3.417		R_p	4.34	
c (Å)	5.141		R_{exp}	3.10	
V ($Å^3$)	81.187		χ^2	6.15	

Table S1. Crystallographic and atomic parameters of the caterpillar-like CuO NSs.

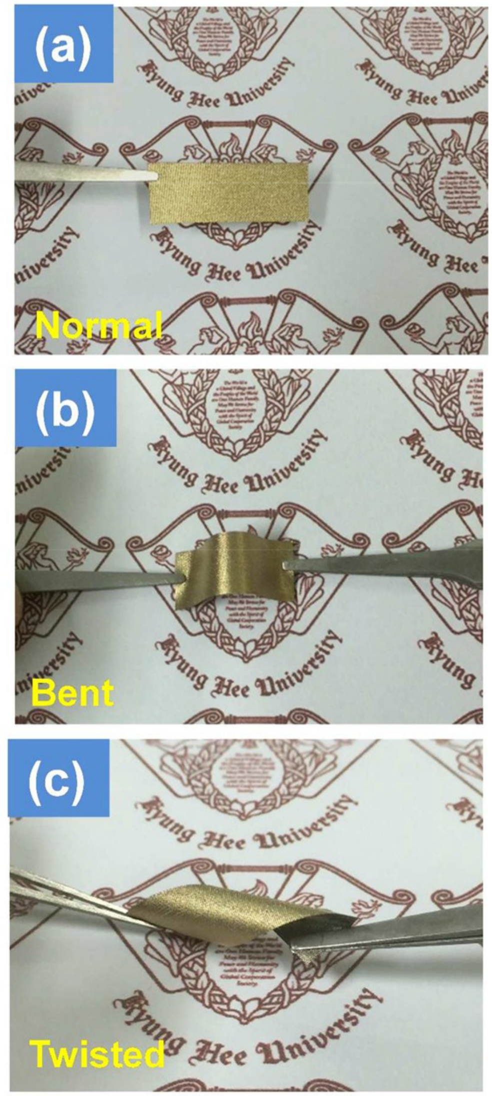

Figure S1. (a-c) Photographic images of the CWTs under normal, bent and twisted conditions, showing its great flexibility.

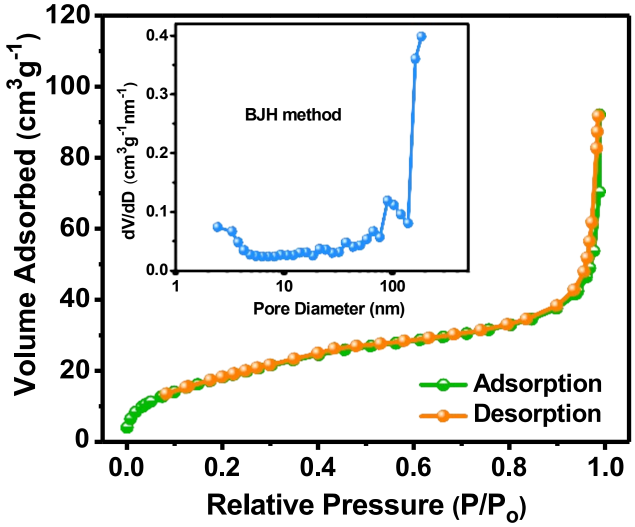

Figure S2. N_2-adsorption-desportion isotherms and BJH plots of the caterpillar-like CuO NSs.

Table S2: Comparative electrochemical performances of the caterpillar-like CuO NSs with the previously reported CuO-based nanocomposites in three electrode system.

Active materials	Electro de	Mass (mg/cm^2)	Electrolyte	Current (mA/cm^2)	Areal capacitance (mF/cm^2)	Ref.
Lotus-like $CuO/Cu(OH)_2$	Cu foil	0.35	5 M NaOH	2	97.3	[1]
CuO nanoflakes	Cu foil	0.23	1 M KOH	2	44	[2]
$Cu(OH)_2$ nanobelts	Dacron cloth	--	1 M NaOH	0.5	217	[3]
CuO/rGO com posite	Ni foam	1	0.5 M K_2SO_4	0.5	326	[4]
Flower-like NiO@CuO	Ni foam	2	6 M KOH	2	560	[5]
Gear-like CuO	Cu foil	0.2	0.1 M KOH	0.2	70	[6]
$CuO@MnO_2$	Ni foam	0.8	1 M Na_2SO_4	1.2	552	[7]
$rGO@Cu_2O$ composite	Cu foil	2	1 M KOH	2	197	[8]
Ni@NiO inverse opal	FTO glass	0.1	1 M KOH	0.2	11	[9]
Caterpillar-like CuO NSs	CWTs	1	1 M KOH	2	271.7	Our wor
Caterpillar-like CuO NSs	CWTs	1	1 M KOH + 0.01 M $K_3Fe(CN)_6$	2	670.68	Our wor

Section 1

Fabrication of activated carbon (AC) on carbon fabric (CF):

Commercially purchased AC (80%), PVDF (10%) and conductive carbon black (10%) was homogeneously mixed in an agate mortar for 30 min. After that required amount of N-methyl pyrrolidone was dropped into the above mixture to form slurry. The obtained slurry was uniformly coated on well-cleaned CF fibers and air dried for 2 h. After that, the AC coated on CF (negative electrode) was dried at 80 °C for 6 h to completely remove the moisture. The mass loading of the AC on CC was obtained as 1.0 ± 0.03 mg/cm^2. The electrochemical performance of this electrode was tested in redox-additive electrolyte solution (i.e., 0.01 M $K_3Fe(CN)_6$ + 1 M KOH) with a Pt wire as counter and Ag/AgCl as a reference electrode, respectively. Figure S3 (a) shows the CV curves of the AC coated CF showing the rectangular CV curve area which is a typical behavior of carbon based materials. The measured C_{ac} values from the GCD curves of Figure S3 (b) at a current density 3, 4, and 5 mA/cm^2 are of 339.5296.7 and 276.5 mF/cm^2, respectively.

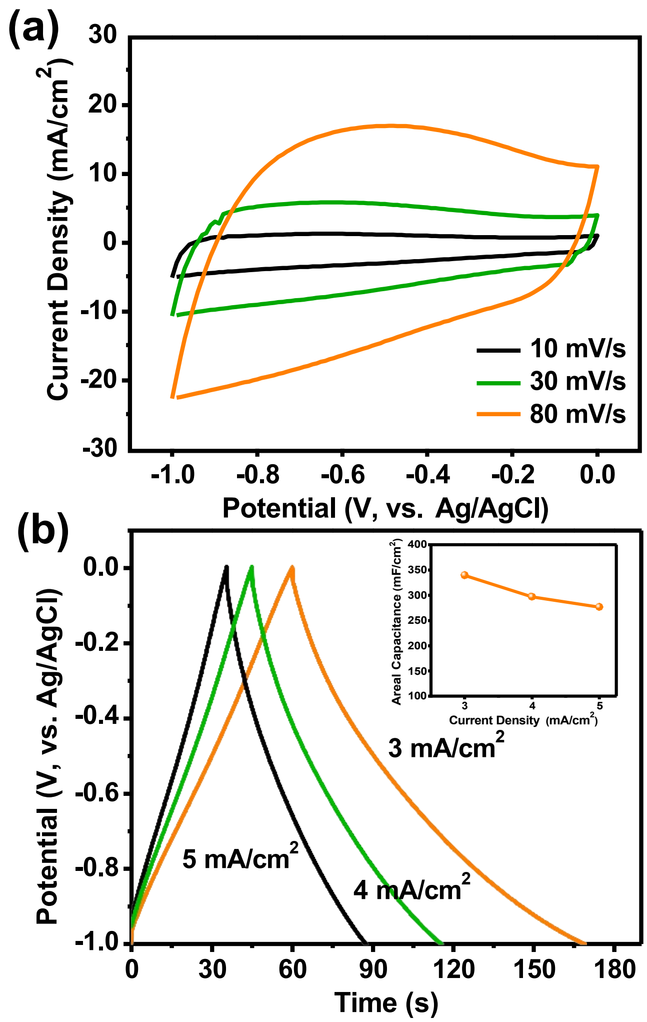

Figure S3. (a) CV curves and (b) GCD curves of the AC on CF at different scan rates and current densities, respectively.

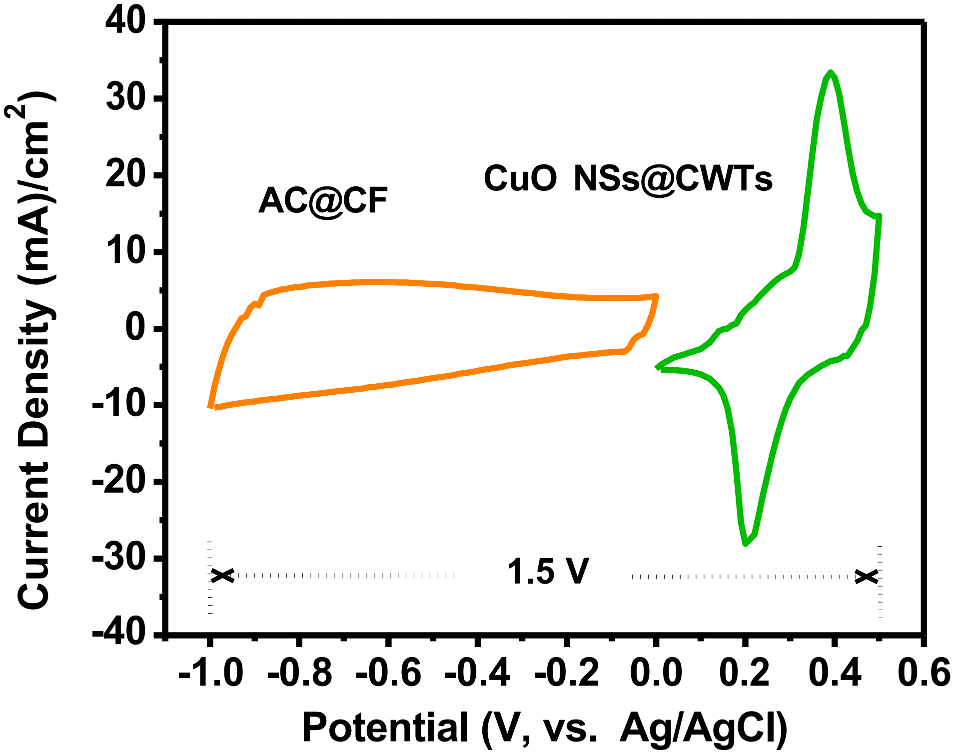

Figure S4. Comparative CV curves of the both negative and positive electrodes measured at scan rate of 30 mV/s in three-electrode system.

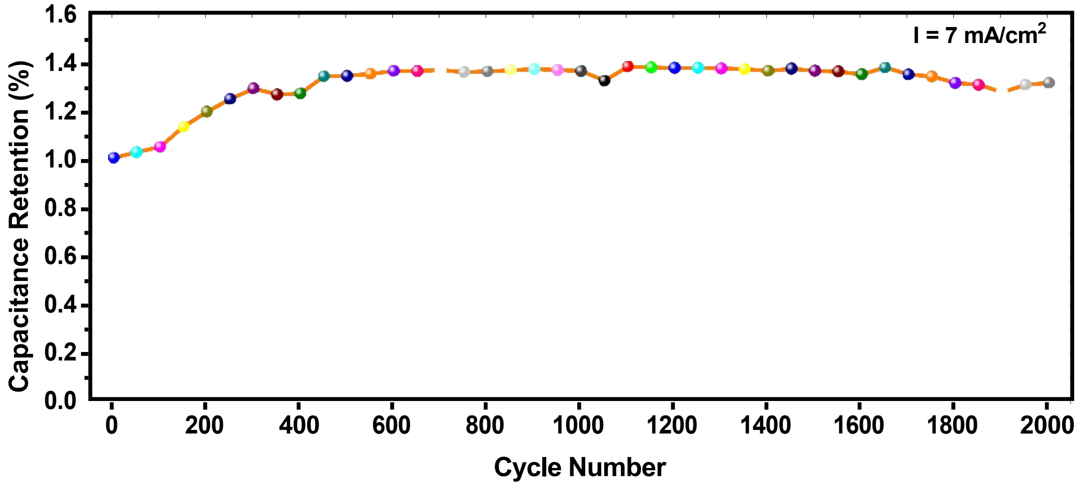

Figure S5. Cycling stability of the fabricated asymmetric SCs based on caterpillar-like CuO NSs on CWTs as positive electrode and AC coated CC as negative electrode, respectively.