Supporting Information

Coaxial Triboelectric Nanogenerator and Supercapacitor Fiber Based Self-Charging Power Fabric

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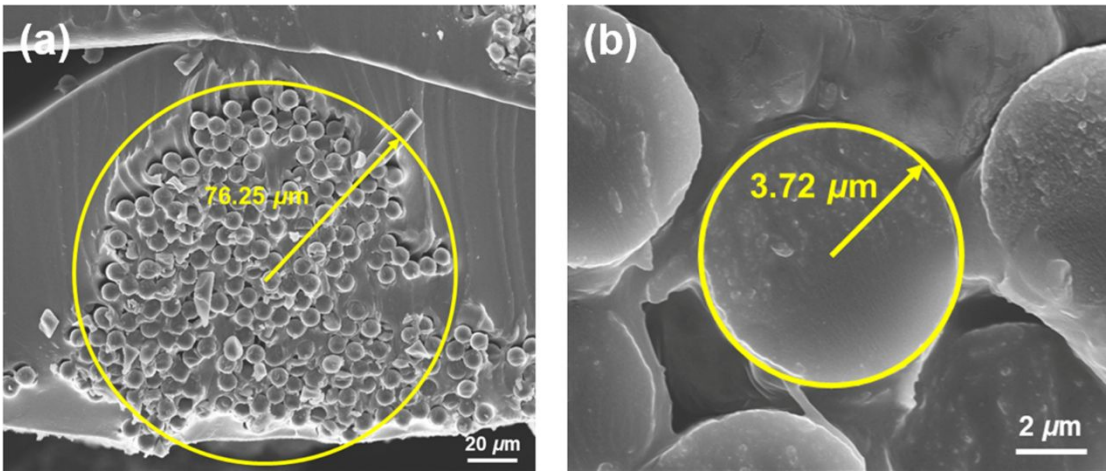

Figure S1. a) SEM image of the carbon fiber bundle serving as the electrode of the supercapacitor. b) SEM image of a single carbon fiber.

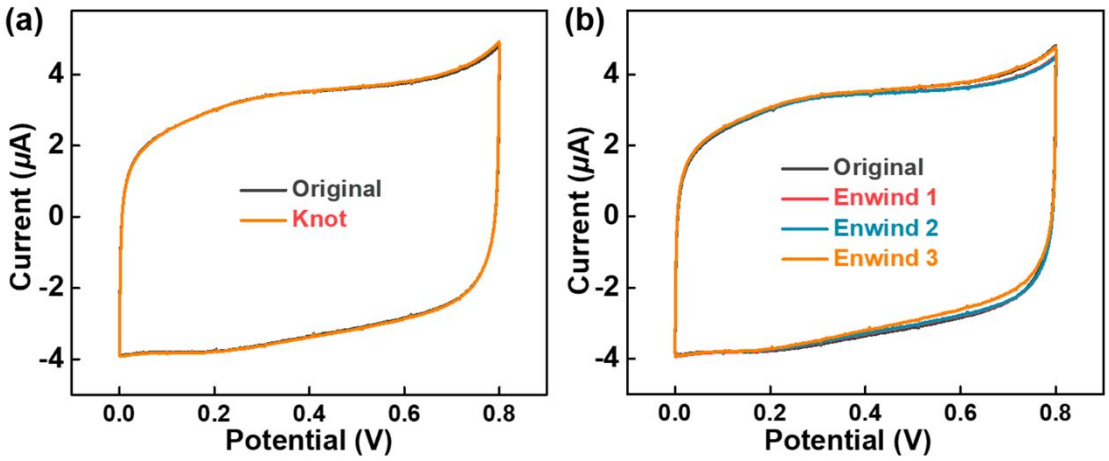

Figure S2. CV curves of the SC when (a) knotting and (b) enwinding.

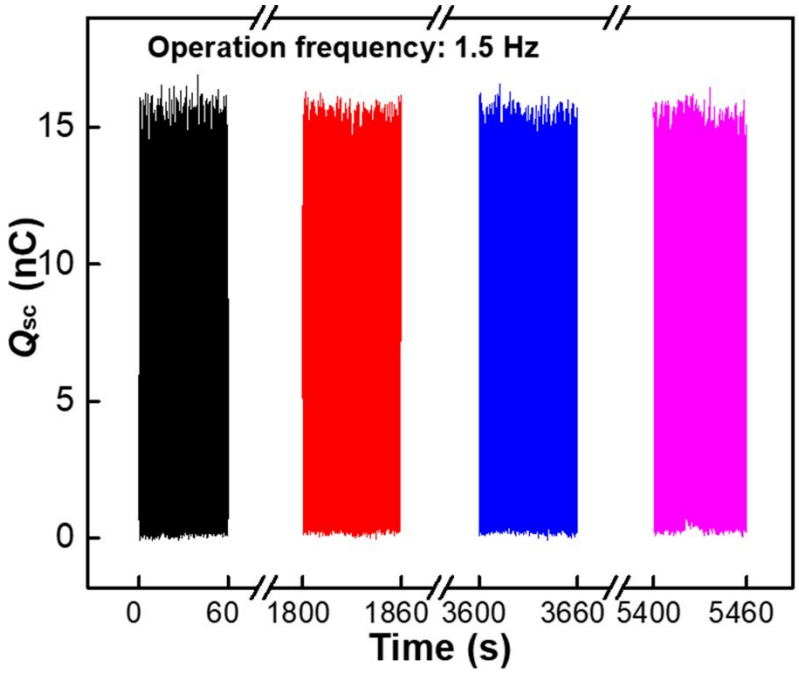

Figure S3. Short-circuit transferred charge of the coaxial fiber cycling for over 8000 cycles at the working frequency of 1.5 Hz.

Figure S4. Photograph of washing test of the multifunctional coaxial self-charging power fiber.

Note S1

The self-charging power textile which includes 8 TENG fibers connected in parallel and four SCs connected in series which has a capacitance of ~ 18.75 μF. After rectifying, the output charge of the TENG was accumulated to ~ 12 μC in 10 s. The efficiency can be calculated as

$$\eta = \frac{output\ charge\ of\ TENG\ after\ rectifying}{stored\ charge\ of\ supercapacitor}$$

where the stored charge can be calculated as $Q = C \cdot V$, according to Figure 4e, the voltage is about 0.2 V in 10 s so that the stored charge is $Q = C \cdot V = 0.2 \times 18.75 = 3.75$ μC. And the efficiency is 31.25%

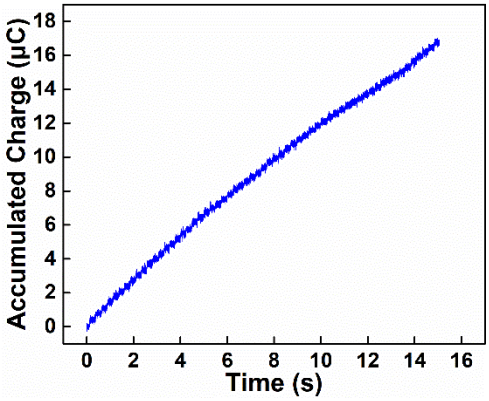

Figure S5. The curve of accumulated charges generated by TENG after rectified.

Table S1. Comparison of the coaxial fiber with other TENG fibers.

Materials	Mode	Diameter of the fiber/mm	Contact Area /cm^2	Frequency/Hz	*V*oc/ V	*I*sc/μA	*Q*tr/μC ·m^{-2}	Power	Ref.
Silione rubber/Stainless steel	Single-electrode	3	4×4	2	140	0.75	31.25	85 mW·m^{-2}	ACS Nano 2017, 11, 9490−9499
Silione rubber/Stainless steel	Single-electrode	1.25	16.51×11.43	/	200	200	15.89	14 mW	Adv. Funct. Mater. 2017, 27, 1604462
PDMS/Stainless steel	3D-TENG	3.5	1.5×1.5	3	45	0.78	80	263.36 mW·m^{-2}	Adv. Mater. 2017, 1702648
PDMS/Carbon wire-PTFE/Cu	Contact and separation mode	2.5	＜2.25×5	2	6	2	/	/	Adv. Mater. 2015, 27, 4830–4836
Nylon /Ag fiber-Polyester /Ag fiber	Contact and separation mode	7 mm in width, 29 cm in length	5×5	/	65	2.5	6	/	ACS Appl. Mater. Interfaces 2014, 6, 14695−14701
Parylene/Ni-Ni-Cotton cloth	Contact and separation mode	Not cylindrical	10×10	5	40	5	/	/	Adv. Mater. 2016, 28, 98–105
Silicone rubber/carbon fiber	Single electrode mode	2.01	＜0.2×10	2.5	42.9	0.51	＞75.5	1.2 μW	This work