

## Supporting information

### **Electrically Stable and Mechanically Robust Stretchable Fiber Conductor**

#### **Prepared by Dip-coating Silver Nanowires on Porous Elastomer Yarn**

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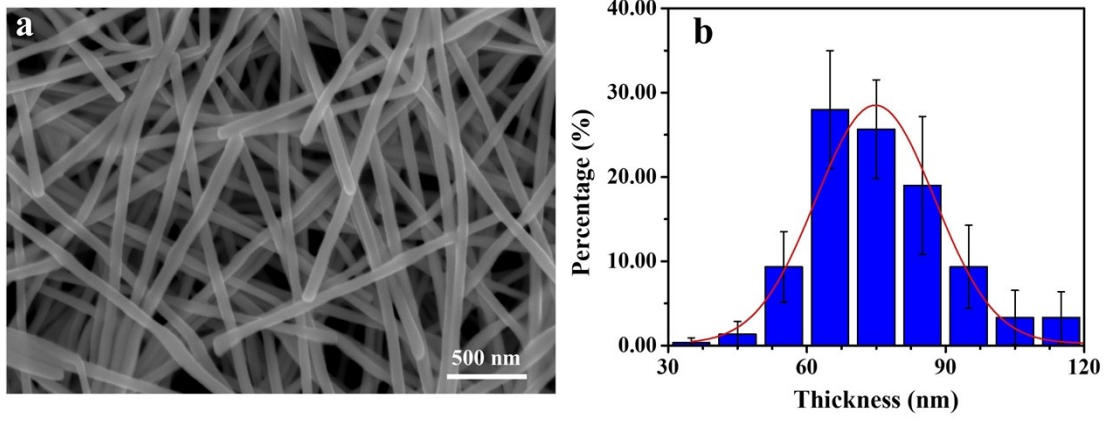
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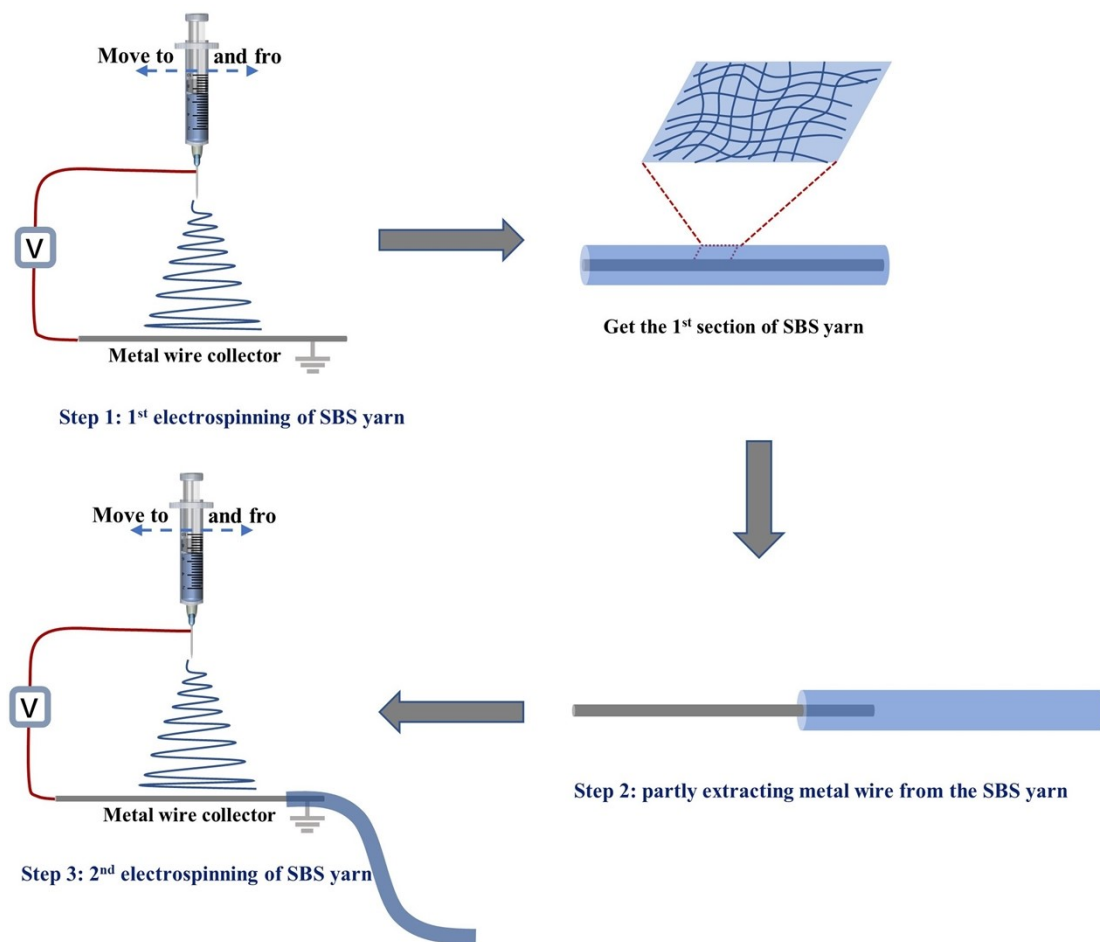
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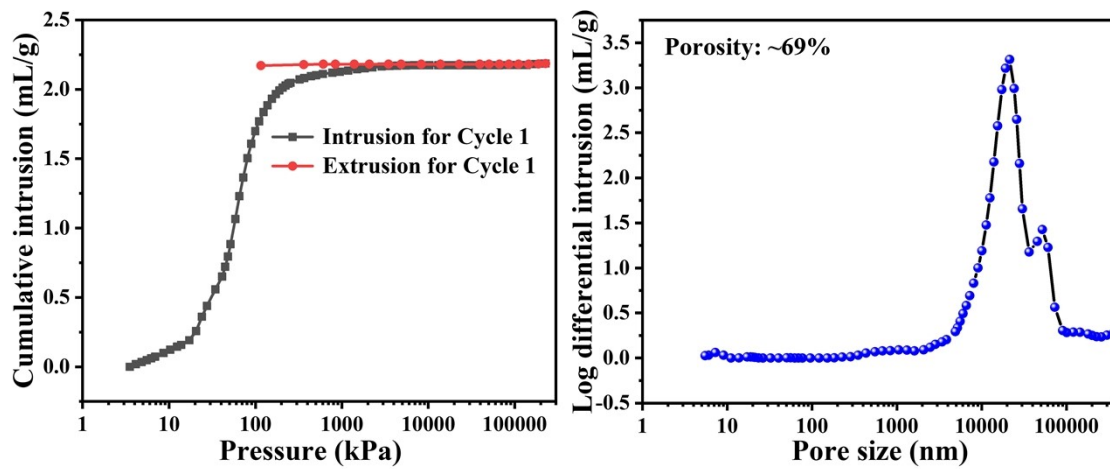


**Fig. S1** SEM image (a) and distribution curve of thickness of the AgNWs used in this work

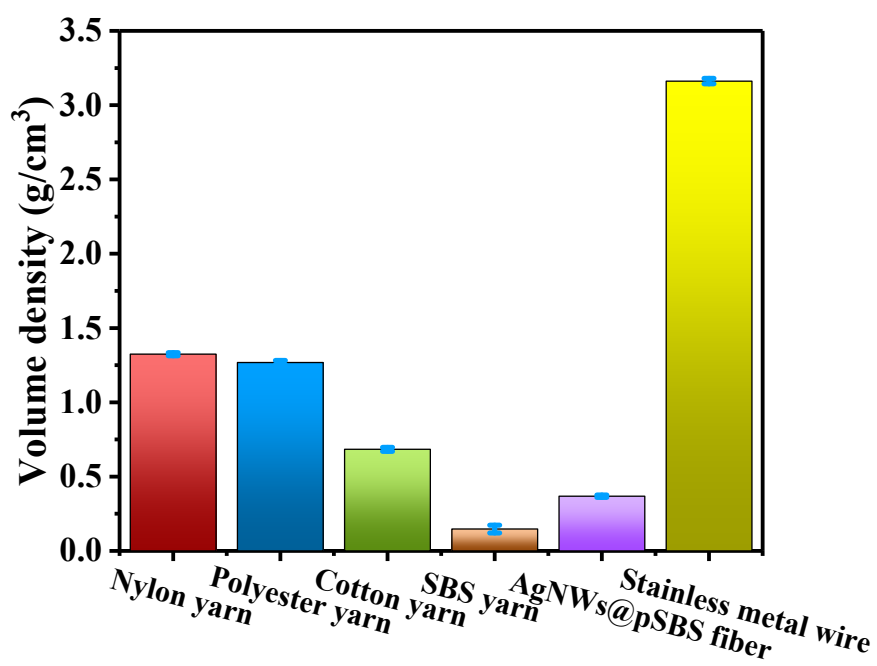


Repeating step 1 to step 3 will get the final continuous SBS yarn with desired length

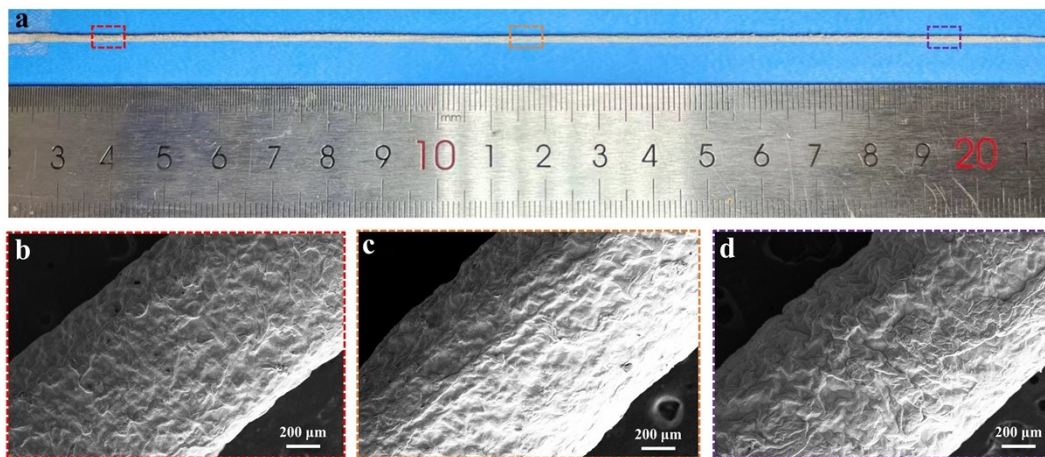
**Fig. S2** A scheme for preparation of continuously long pSBS yarn.



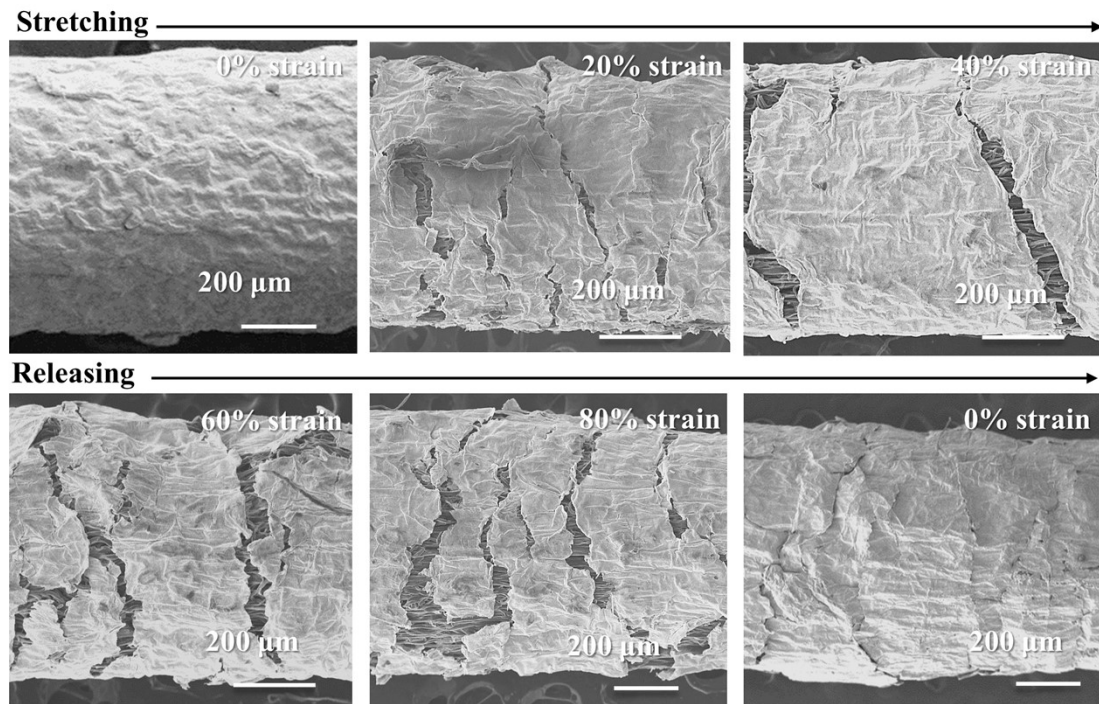
**Fig. S3** Mercury intrusion isotherm curves (a) and the corresponding pore-size distribution curve (b) of the AgNWs@pSBS fiber.



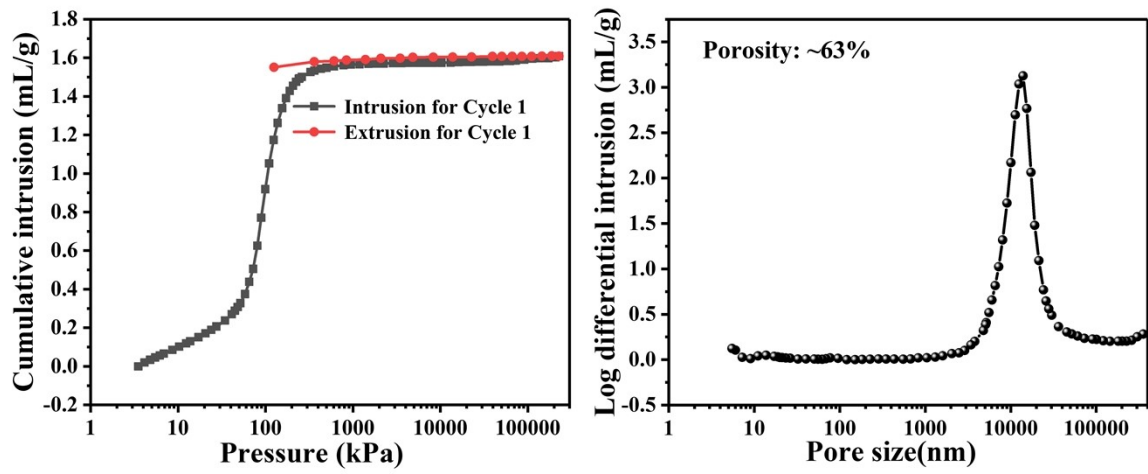
**Fig. S4** The volume density of commercial yarns, pSBS-20-8 yarn, AgNWs@pSBS-20-8 fiber and stainless metal wire.



**Fig. S5** Digital photo (a) of a typical AgNWs-pSBS-20-8 fiber and its SEM images (b-d) collected at different parts marked by the colored boxes.

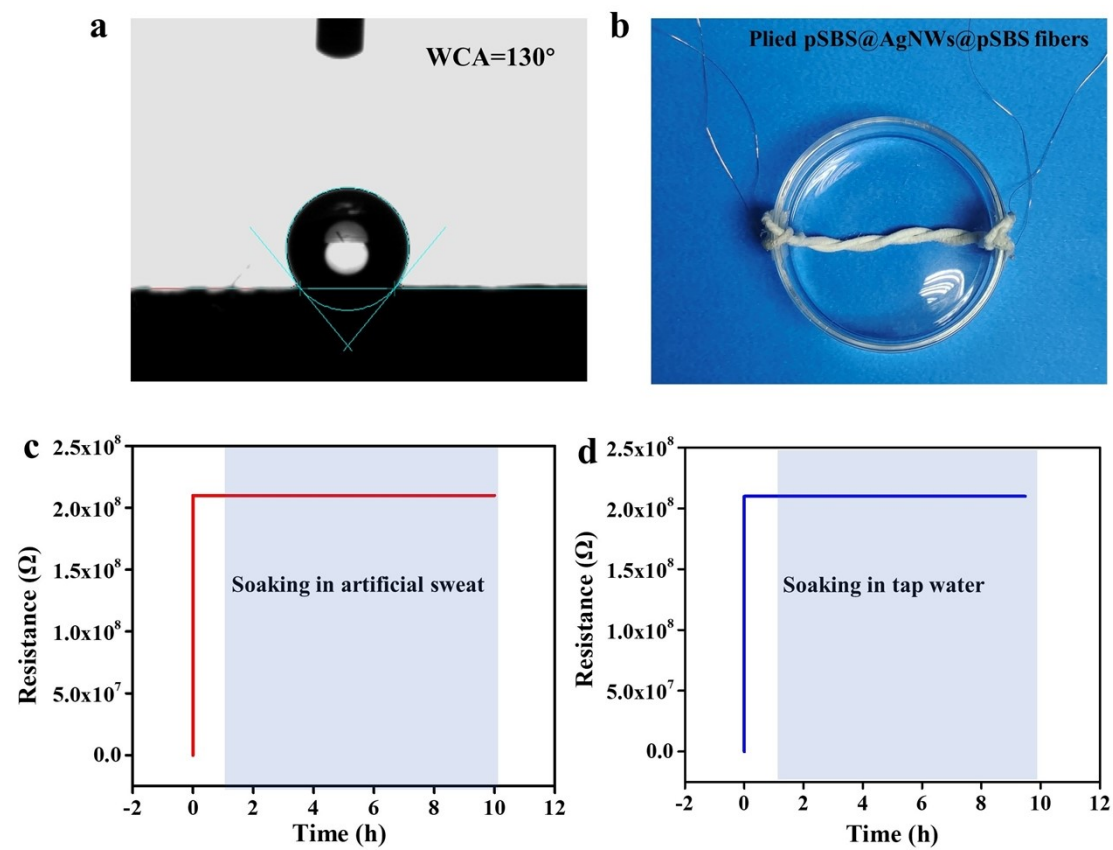


**Fig. S6** SEM images of an AgNWs@pSBS-20-8 fiber under different strains during the stretching and releasing process.



**Fig. S7** Mercury intrusion isotherm curves (a) and the corresponding pore-size distribution curve (b) of the pSBS@AgNWs@pSBS fiber.





**Fig. S8** (a) Water contact angle on a pSBS@AgNWs@pSBS fiber. (b) Digital photo of one pair of plied pSBS@AgNWs@pSBS fibers soaked in artificial sweat. (c), (d) Resistance change of the plied pSBS@AgNWs@pSBS fibers during soaking in artificial sweat and tap water.

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**Table S1** Original data for statistical calculating the average diameter and the corresponding mean square error of an AgNWs-pSBS-20-8 fiber.

Measuring number	Data (mm)	Measuring number	Data (mm)	Measuring number	Data (mm)
1	1.26376	11	1.37485	21	1.26748
2	1.26376	12	1.37485	22	1.26748
3	1.26376	13	1.37485	23	1.26748
4	1.26376	14	1.37485	24	1.26748
5	1.26376	15	1.37485	25	1.26748
6	1.26376	16	1.37485	26	1.26748
7	1.26376	17	1.37485	27	1.26748
8	1.26376	18	1.37485	28	1.26748
9	1.26376	19	1.37485	29	1.26748
10	1.26376	20	1.37485	30	1.26748