

Supplementary Information

Collagen fibers from chrome shavings for an ionic capacitive pressure sensor

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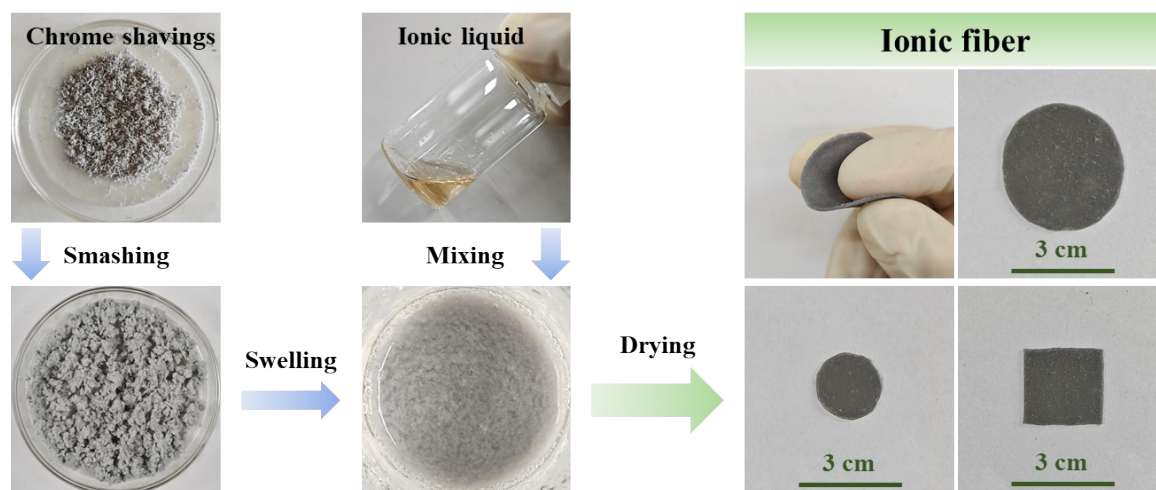


Fig. S1. Digital images of the ionic fiber preparation process.

Table S1. Elemental analysis of ionic fibers with different IL [EMIM][OTF] ratios.

Atomic %	C	N	O	F
1 : 3	67.41	7.6	18.61	6.38
1 : 4	64.38	9.51	18.28	7.83
1 : 5	62.36	9.2	19.35	9.09
1 : 6	61.58	10.67	17.29	10.46

Table S2. Sensitivities of ionic fibers with different IL [EMIM][OTF] ratios.

	I	II	III
1 : 3	2.11 kPa ⁻¹ (0-1.4 kPa)	0.55 kPa ⁻¹ (1.4-8 kPa)	0.34 kPa ⁻¹ (8-17.6 kPa)
1 : 4	3.08 kPa ⁻¹ (0-1.3 kPa)	0.94 kPa ⁻¹ (1.3-7.5 kPa)	0.46 kPa ⁻¹ (7.5-16.5 kPa)
1 : 5	5.37 kPa ⁻¹ (0-1.2 kPa)	1.7 kPa ⁻¹ (1.2-7 kPa)	0.95 kPa ⁻¹ (7-15.8 kPa)
1 : 6	5.03 kPa ⁻¹ (0-1.1 kPa)	1.2 kPa ⁻¹ (1.1-6.5 kPa)	0.46 kPa ⁻¹ (6.5-15.3 kPa)

Table S3. Sensitivities of this work and some previously reported fiber-based CPSs.

	Material	Sensitivity
Ref 7	P(VDF-TrFE) nanofibers membrane	4.05 kPa ⁻¹ (0-1 kPa), 0.18 kPa ⁻¹ (1-10 kPa), 0.042 kPa ⁻¹ (10-100 kPa)
Ref 9	Carbon ink filter paper	1.47 kPa ⁻¹ (0-10 kPa), 0.6 kPa ⁻¹ (10-100 kPa)
Ref 30	PU/CNT fibers	1.28 kPa ⁻¹ (0-2 kPa), 0.93 kPa ⁻¹ (2-10 kPa), 0.76 kPa ⁻¹ (10-25 kPa), 0.21 kPa ⁻¹ (25-50 kPa)
Ref 31	AgNWs@TPU fibers	1.21 kPa ⁻¹ (0-3 kPa), 0.15 kPa ⁻¹ (3-28 kPa)
Ref 32	PVDF nanofibers membrane	1.12 kPa ⁻¹ (0-1 kPa)
Ref 33	CNT-PVDF nanofibers membrane	0.99 kPa ⁻¹ (0-1.2 kPa), 0.63 kPa ⁻¹ (1.2-15 kPa)
Ref 34	PLGA-PCL nanofibers membrane	0.863 kPa ⁻¹ (0-1.86 kPa), 0.062 kPa ⁻¹ (1.86-4.6 kPa)
Ref 35	PILNM nanofibers membrane	0.49 kPa ⁻¹ (0-0.2 kPa), 0.18 kPa ⁻¹ (0.2-10 kPa)
Ref 36	SBS/AgNP composite-coated Kevlar fibers	0.21 kPa ⁻¹ (0-2 kPa), 0.064 kPa ⁻¹ (2-10 kPa)
Ref 10	Liquid metal/cotton thread composites	0.131 kPa ⁻¹ (0-5 kPa)
This work	Chrome shavings collagen fibers and ionic liquid [EMIM][OTF]	5.37 kPa ⁻¹ (0-1.2 kPa), 1.7 kPa ⁻¹ (1.2-7 kPa), 0.95 kPa ⁻¹ (7-15.8 kPa)

A	● —	J	● — — —	S	● ● ●
B	— ● ● ●	K	— ● —	T	—
C	— ● — ●	L	● — ● ●	U	● ● —
D	— ● ●	M	— —	V	● ● ● —
E	●	N	— ●	W	● — —
F	● ● — ●	O	— — —	X	— ● ● —
G	— — ●	P	● — — ●	Y	— ● — —
H	● ● ● ●	Q	— — ● —	Z	— — ● ●
I	● ●	R	● — ●		

Fig. S2. Schematic diagram of Morse code.