

## Supplementary Information

### Hydrogel from Chrome Shavings for a Highly Sensitive Capacitive Pressure Sensor

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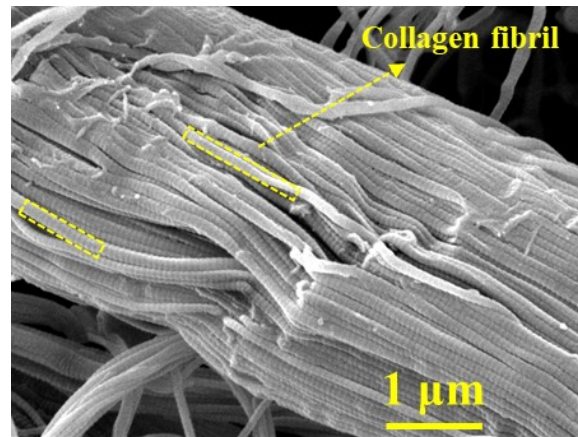


Fig. S1. SEM image of collagen fiber.

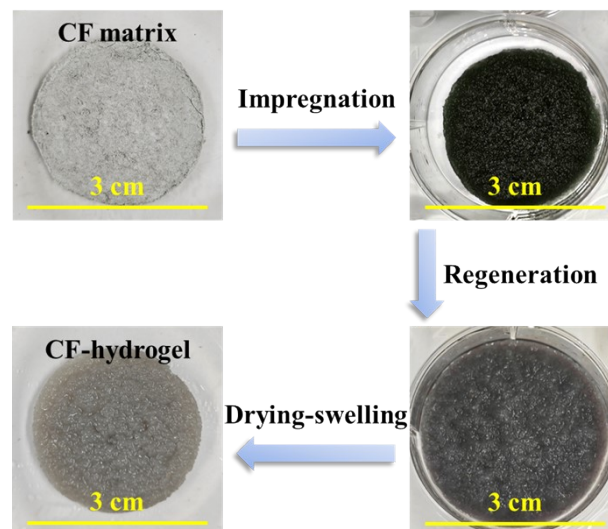


Fig. S2. Digital images at each stage in the CF-hydrogel conversion.

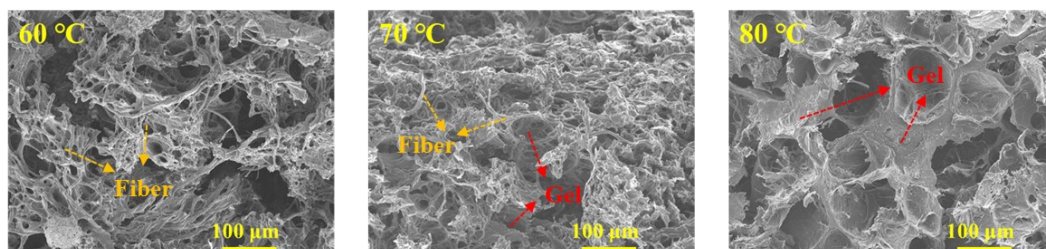


Fig. S3. SEM images of the cross-section of CF-hydrogels with different immersion temperatures.

Table S1. Sensitivities of CF-hydrogels with different immersion temperatures.

	I	II	III
60 °C	3.27 kPa <sup>-1</sup> (0-0.8 kPa)	0.91 kPa <sup>-1</sup> (0.8-2.3 kPa)	0.19 kPa <sup>-1</sup> (2.3-9.52 kPa)
70 °C	5.2 kPa <sup>-1</sup> (0-0.6 kPa)	1.2 kPa <sup>-1</sup> (0.6-2.4 kPa)	0.34 kPa <sup>-1</sup> (2.4-9.84 kPa)
80 °C	1.69 kPa <sup>-1</sup> (0-0.5 kPa)	0.67 kPa <sup>-1</sup> (0.5-1.5 kPa)	0.21 kPa <sup>-1</sup> (1.5-6.76 kPa)

Table S2. Sensitivities of CF-hydrogels with different NaCl concentrations.

	I	II	III
0 wt%	5.2 kPa <sup>-1</sup> (0-0.6 kPa)	1.2 kPa <sup>-1</sup> (0.6-2.4 kPa)	0.34 kPa <sup>-1</sup> (2.4-9.84 kPa)
5 wt%	6.01 kPa <sup>-1</sup> (0-0.9 kPa)	1.62 kPa <sup>-1</sup> (0.9-3 kPa)	1.22 kPa <sup>-1</sup> (3-8.95 kPa)
10 wt%	3.14 kPa <sup>-1</sup> (0-1.1 kPa)	1.42 kPa <sup>-1</sup> (1.1-3.2 kPa)	1.01 kPa <sup>-1</sup> (3.2-8.39 kPa)

Table S3. Elemental analysis of CF-hydrogels with different NaCl concentrations.

Atomic %	C	O	N	Na	Cl
0 wt%	53.73	27.06	19.21	-	-
5 wt%	64.71	19.34	13.31	1.85	0.78
10 wt%	63.62	17.42	15.08	2.68	1.20

Table S4. Sensitivities of this work and previously reported results.

	Sensitivity
Ref 15	2.33 kPa <sup>-1</sup> (0-3 kPa), 0.33 kPa <sup>-1</sup> (3-10 kPa)
Ref 16	3.19 kPa <sup>-1</sup> (0-0.5 kPa), 0.81 kPa <sup>-1</sup> (0.5-3 kPa), 0.15 kPa <sup>-1</sup> (3-5 kPa)
Ref 17	0.91 kPa <sup>-1</sup> (0-2 kPa)
Ref 34	0.19 kPa <sup>-1</sup> (0-1.5 kPa), 0.02 kPa <sup>-1</sup> (1.5-5 kPa)
Ref 35	2.17 kPa <sup>-1</sup> (0-4.5 kPa), 0.54 kPa <sup>-1</sup> (4.5-7.5 kPa)
Ref 36	0.898 kPa <sup>-1</sup> (0-3 kPa)
Ref 37	0.77 kPa <sup>-1</sup> (0-1.8 kPa), 0.12 kPa <sup>-1</sup> (1.8-7 kPa)
Ref 38	0.293 kPa <sup>-1</sup> (0-1.5 kPa), 0.227 kPa <sup>-1</sup> (1.5-5 kPa)
Ref 39	0.22 kPa <sup>-1</sup> (0-1.4 kPa), 0.13 kPa <sup>-1</sup> (1.4-4.7 kPa), 0.07 kPa <sup>-1</sup> (4.7-8 kPa)
Ref 40	0.03 kPa <sup>-1</sup> (0-2.45 kPa)
This work	6.01 kPa <sup>-1</sup> (0-0.9 kPa), 1.62 kPa <sup>-1</sup> (0.9-3 kPa), 1.22 kPa <sup>-1</sup> (3-8.95 kPa)

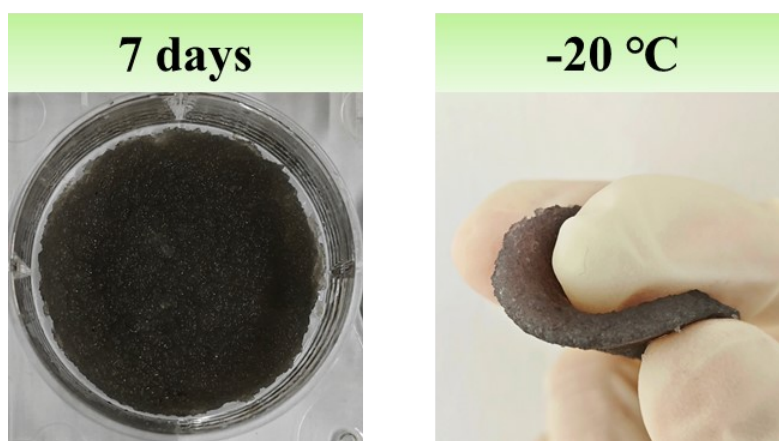


Fig. S4. Digital images of CF-organohydrogel after 7 days and CF-organohydrogel at -20 °C.