Supporting Information

Flexible thermoelectric CMTs/KCl gelatin composite for wearable pressure and temperature sensor

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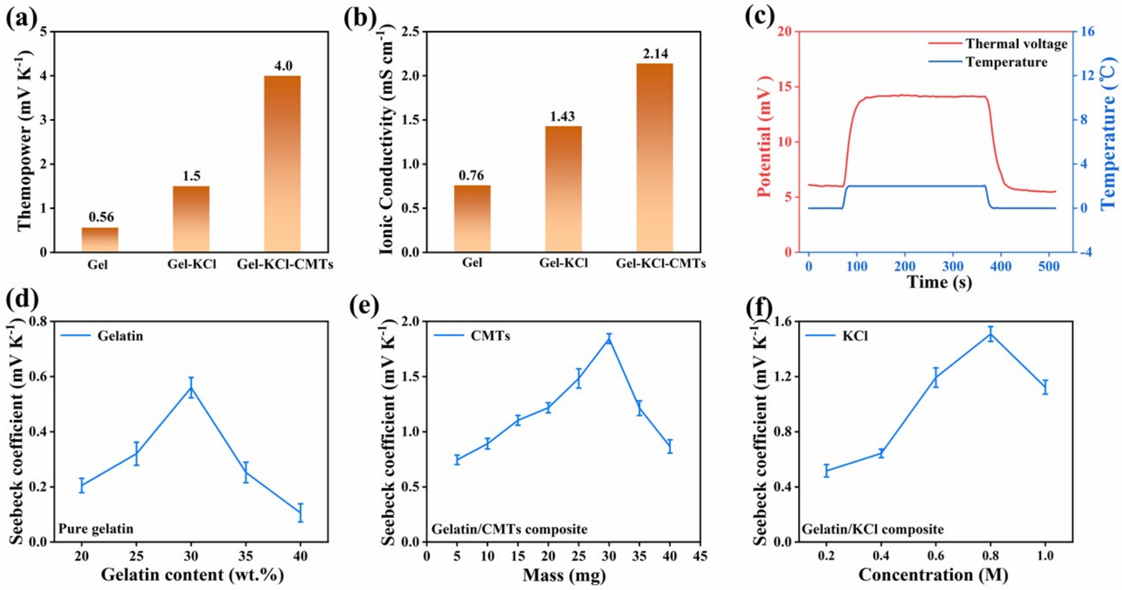

Fig. S1. (a) Seebeck coefficient of gels with different components. (b) Conductivity of gels with different components. (c) Thermal voltage of ionic gel. (d) Seebeck coefficient of pure gelatin sample with different mass fraction of gelatin. (e) Seebeck coefficient of gelatin/CMTs sample with different additions of CMTs. (f) Seebeck coefficient of gelatin/KCl sample with different KCl concentrations.

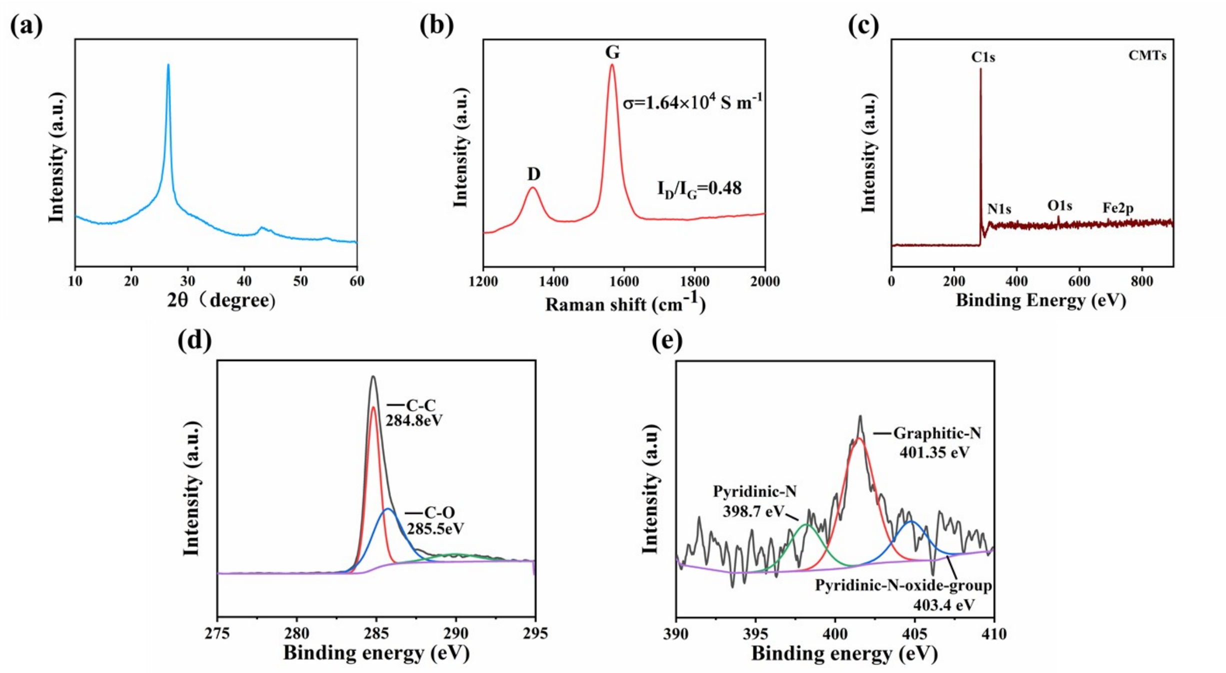

Fig. S2. (a) XRD patterns of CMTs. (b) Raman spectra and conductivity of CMTs. (c) XPS survey spectra and (d) C 1s, (e) N 1s spectra of CMTs.

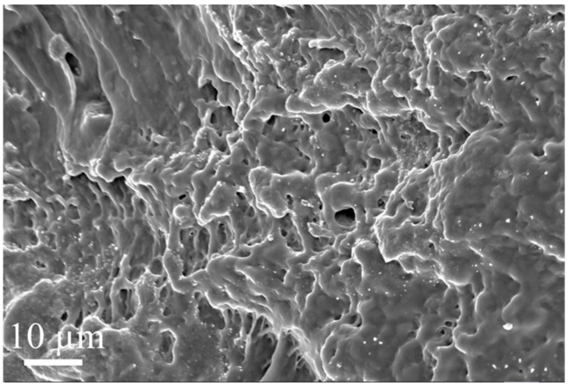

Fig. S3. SEM images of the KCl/gelatin composite.

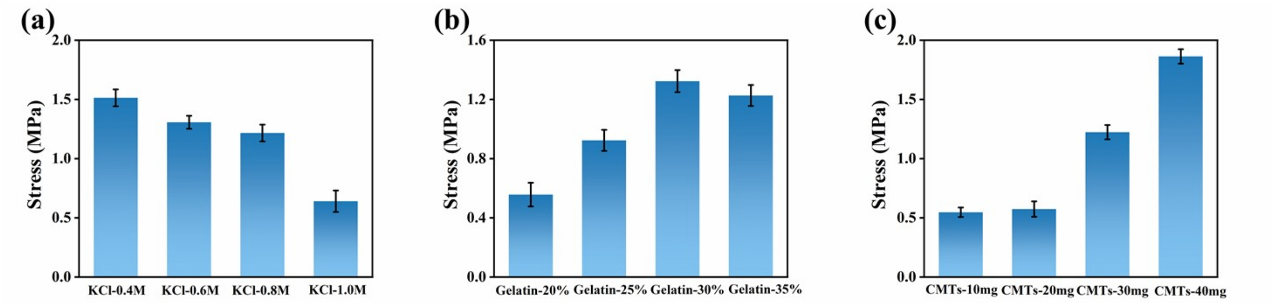

Fig. S4. Mechanical properties of the CMTs/KCl/gelatin composite with (a) different KCl concentrations. (b) different mass fraction of gelatin and (c) different additions of CMTs.

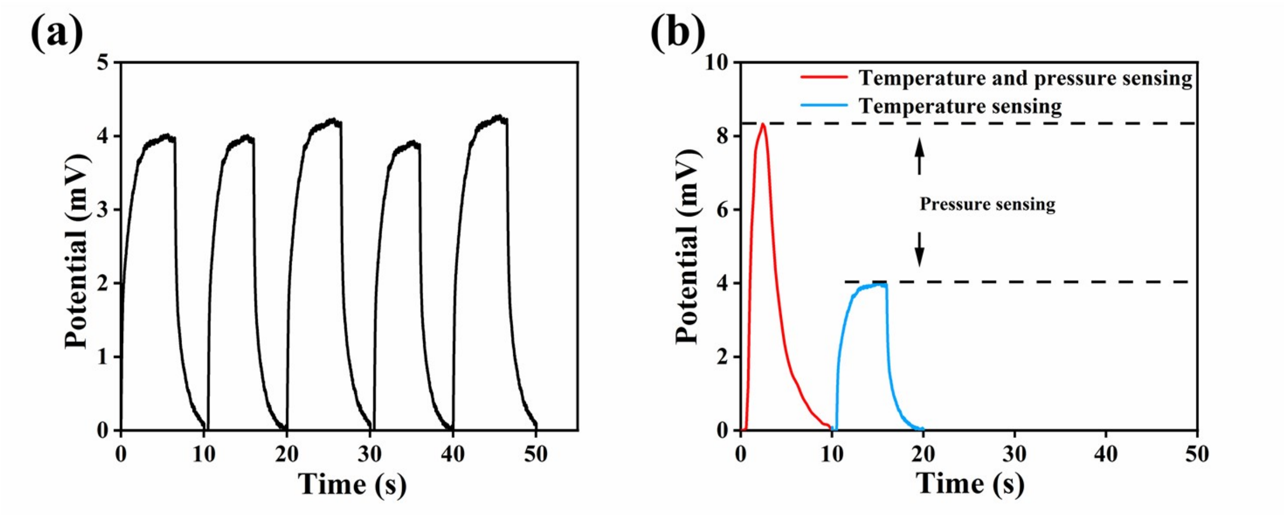

Fig. S5. (a) Voltage response of the sensor at a temperature difference of 1 K. (b) The effect of pressure on the potential change of the sensor.

Table S1. The comparison of Seebeck coefficients of the CMTs/KCl/gelatin with other materials

Material	Ion donors	Seebeck(mV/K)	Ref
Gelatin	[EMIM]DCA	2.8	1
PVA	Fe^{2+}/Fe^{3+}	1.02	2
Cellulose	$[Co(bpy)_3]^{2+/3+}$	1.15	3
PEDOT:PSS	Ag^{+}	0.1	4
PMMA/SWCNT	Sn^{2+}/Sn^{4+}	1.1	5
PEGDMA	$BMIM:BF_4$	2.35	6
PVDF-HFP	$Co(bpy)_3{}^{2+/3+}$	1.84	7
Sodium polyacrylate	Fe^{2+}/Fe^{3+}	-1.09	8

Table S2. The comparison of the CMTs/KCl/Gel sensor in this study with other materials

Material	Sensor type	Pressure sensing	Temperature sensing	Flexibility	Cost	Environmental impact	Ref
The CMTs/KCl/Gel composite	Dual-mode	Able	Able	Good	Low	Low	This work
Carbon nanotubes and $Ti_3C_2T_x$ MXene	Piezoresistive	Able	Unable	Good	High	Low	9
Porous polyurethane and Graphene	Piezoresistive	Able	Unable	Good	High	Low	10
PEDOT/PSS/CNF	Piezoresistive	Unable	Able	Good	High	Low	11
Polyethyleneimine/reduced graphene oxide	Piezoresistive	Unable	Able	Good	High	High	12
Polydimethylsiloxane	Capacitive	Unable	Able	Bad	Low	High	13
MWCNT/PDMS	Capacitive	Able	Unable	Good	High	High	14

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