

Supporting Information

Development of PVDF/1D-2D Nanofiller Porous Structure Pressure Sensor using Near-Field Electrospinning for Human Motion and Vibration Sensing

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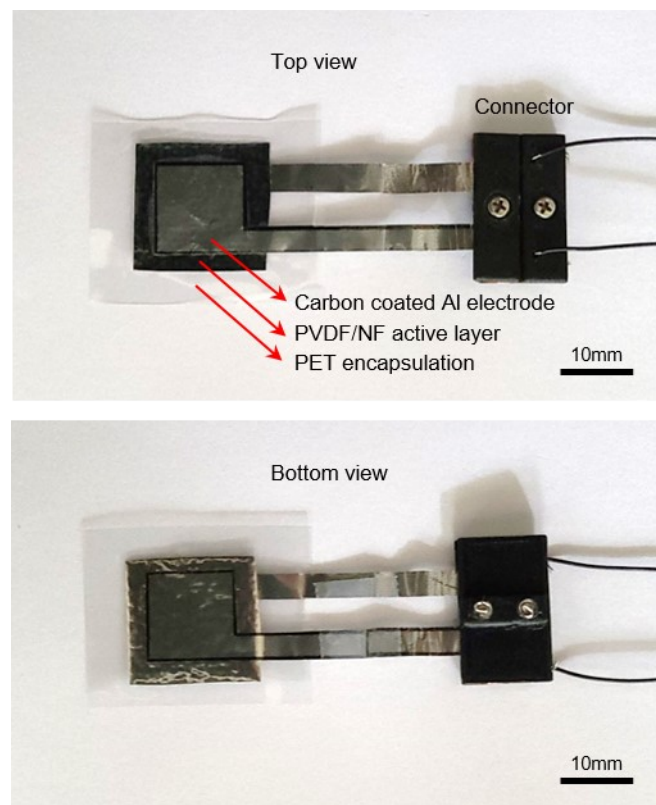


Figure S1 A photo (top and bottom view) of the fabricated sensor with the connector.

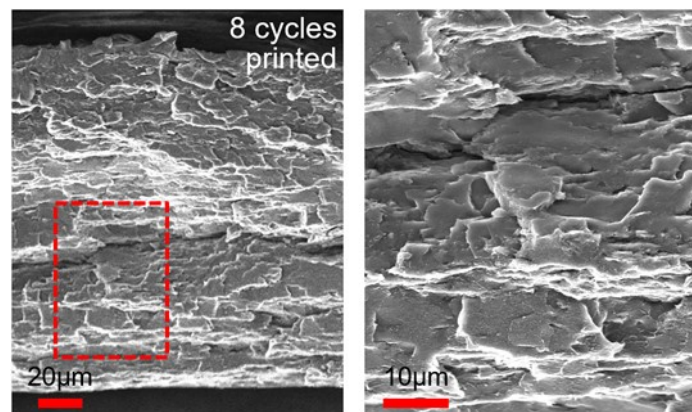


Figure S2 Shows the cross-sectional SEM images of the 8 cycle printed layer.

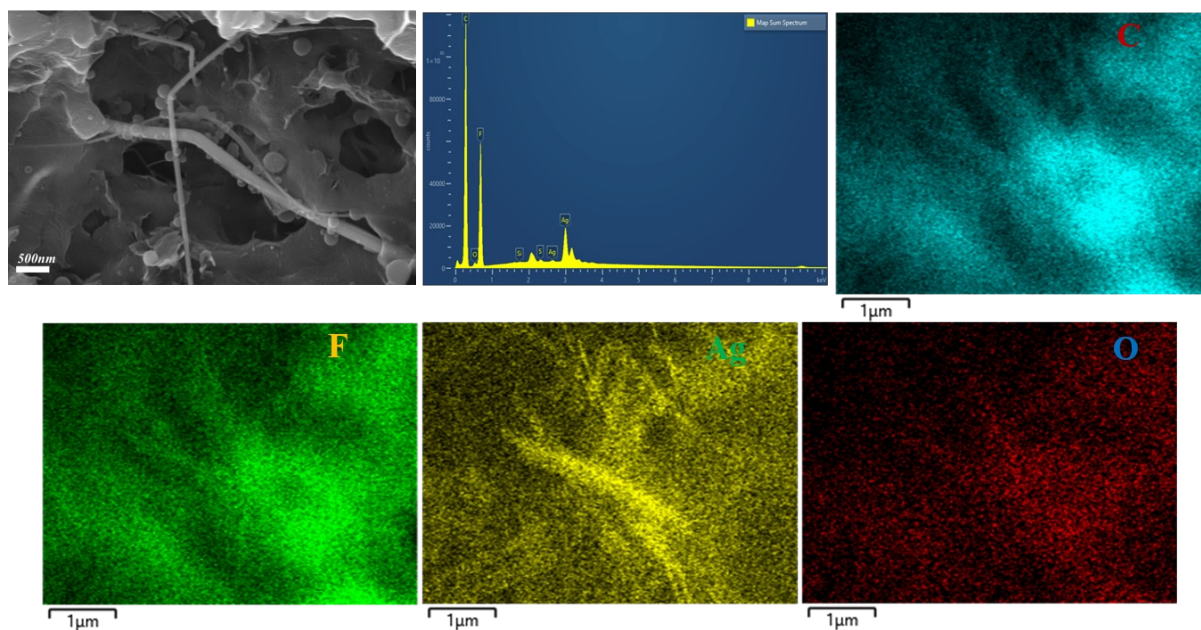


Figure S3 Shows the EDS spectra and elemental mapping of PVDF/NF.

Table S1 Atomic weight% of C, F, O, and Ag of PVDF/NF

PVDF/NF Elemental analysis	
Element	Atomic %
C	72.52
F	24.84
Ag	1.22
O	1.32
Si	0.02
S	0.09

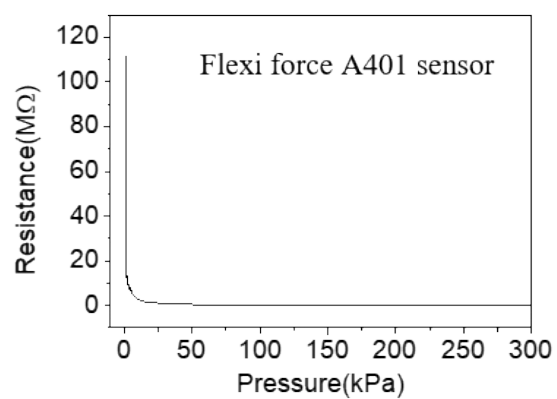


Figure S4 Resistance vs. Pressure Curve of the commercial Flexi force A401 sensor.

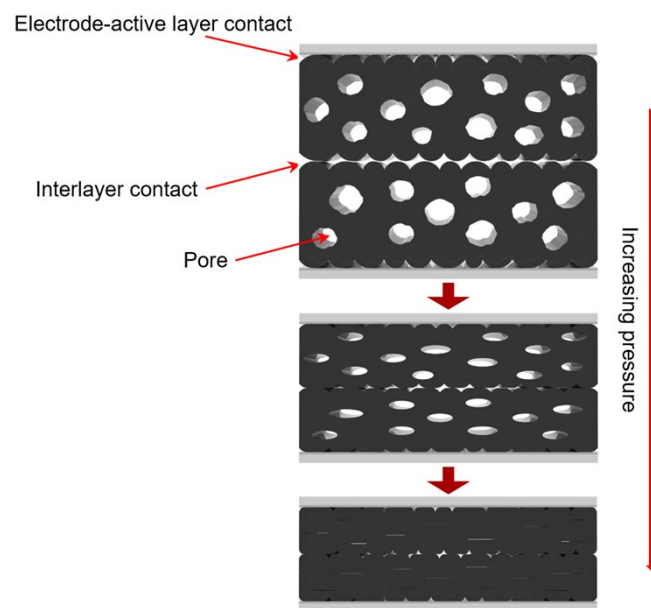


Figure S5 The schematic illustration reveals the sensing mechanism of the PVDF/NF sensor.

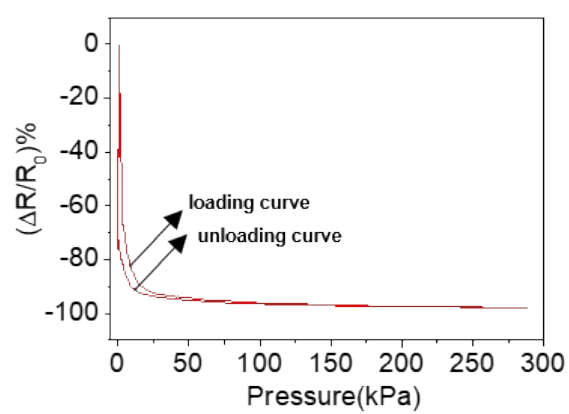
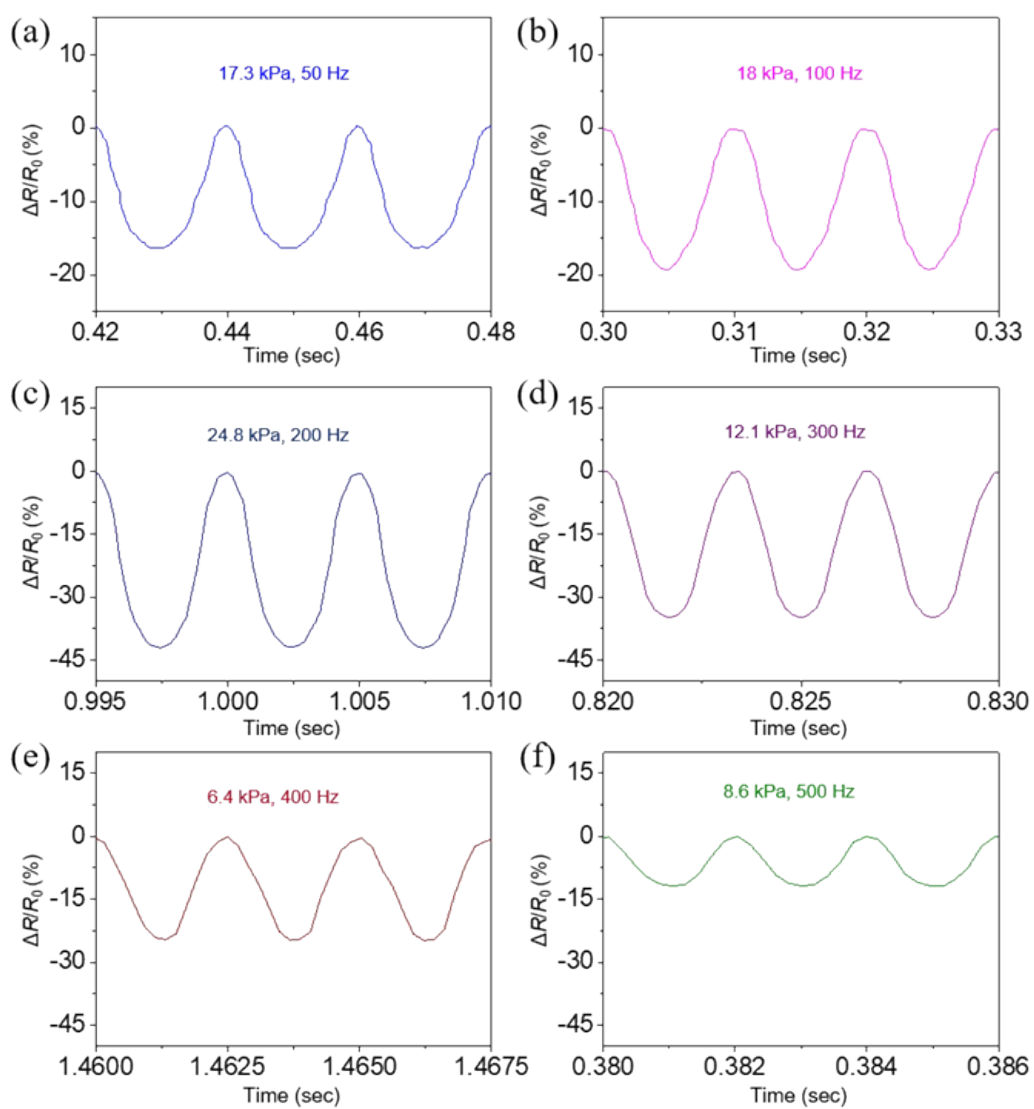


Figure S6 Hysteresis performance of a sensor under loading and unloading.



Figures S7 (a)-(f) show the enlarged views of the high-frequency pressure measurements at 50Hz, 100Hz, 200Hz, 300Hz, 400Hz, and 500Hz, respectively.

Table S2 The dynamic pressure bandwidths of recently reported piezo-resistive pressure sensors in comparison with the PVDF/NF sensor.

S.No	Materials	Method	Dynamic bandwidth pressure	Ref.
1	CNTs/TPU/SR foam	Dip-coating	100Hz	1
2	Microstructure MWCNTs/PDMS	Mold casting	300Hz	2
3	Graphene elastomer	Freeze casting	2000Hz	3
4	ZnO NWs on PDMS	Dip-coating	250Hz	4
5	Graphene elastomer	Freeze casting	20-300Hz	5
6	PDMS/Pt	magnetron sputtering	100Hz	6
7	Graphene/epoxy resin	Screen printing	0.5 to 20Hz	7
8	PVDF/MWCNTs/rGO/Ag NWs	Near-field electrospinning	500Hz	This work

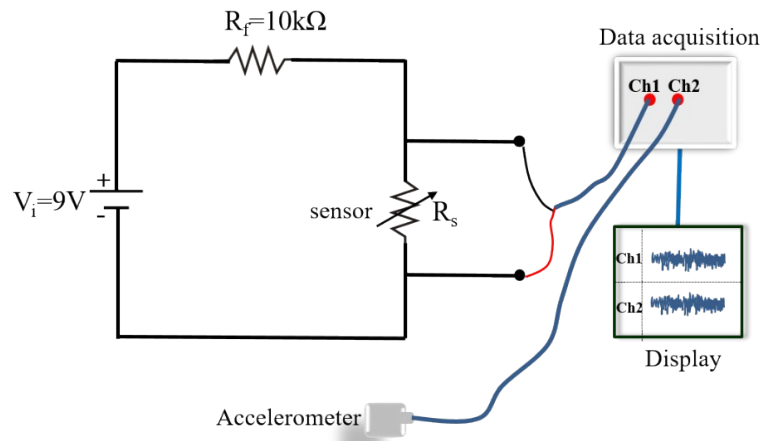


Figure S8 presents the equivalent voltage divider circuit diagram and schematic for vibration sensing using pressure and accelerometer sensors.

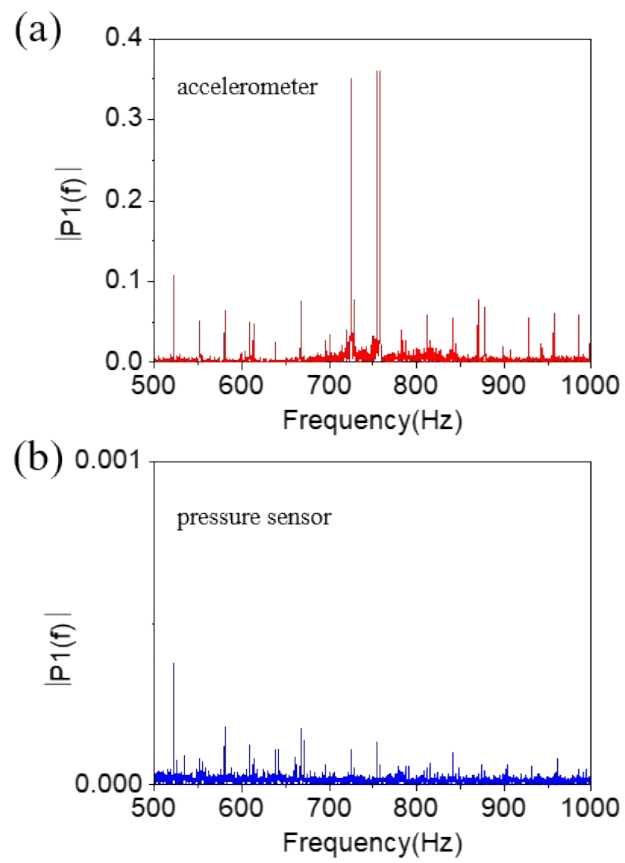


Figure S9 Presents an enlarged view of the spectrum in the range of 500–1000 Hz

References

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