

Supporting Information for

Low energy consumption fiber-type memresistor array with integrated sensing-memory

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Supplementary Text

Figure S1. Scanning electron microscopy (SEM) images of Ag-coated (left panel) carbon fibers and Pt-coated (right panel) carbon fibers

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Figure S9. The typical I - V curve of device Ag/PEDOT/Pt in fresh state (blank line) and for four months (blue line).

Figure S10. The typical I - V curve of device with free-standing state, compressing state (50 kPa) and recovery state after experiencing pressure.

Figure S11. The typical I - V curve of device with of memristor Pt/PEDOT:PSS-ion gel/Au (green line) and Pt/PEDOT:PSS-ion gel/Au(blank line)

Figure S12. The typical I - V curve of device with P3HT as active material of memristor under varied sweep range (-1~1V, -0.8V~0.8V, -0.6V~0.6V, -0.4V~0.4V).

Supplementary Figures

Figure S1

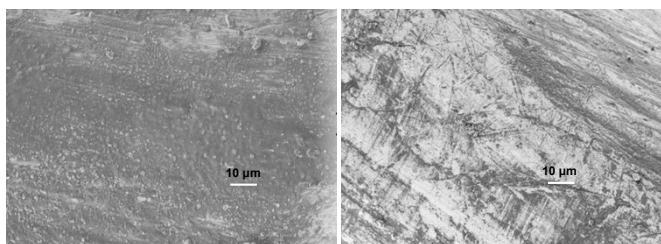


Figure S1. Scanning electron microscopy (SEM) images of Ag-coated (left panel) carbon fibers and Pt-coated (right panel) carbon fibers

Figure S2

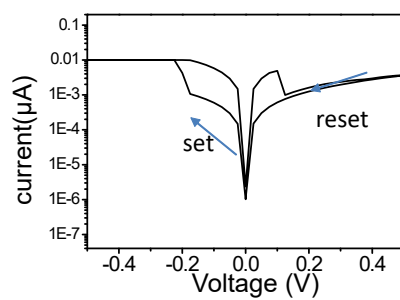


Figure S2. The typical I - V curve of device back-forward sweep

Figure S3

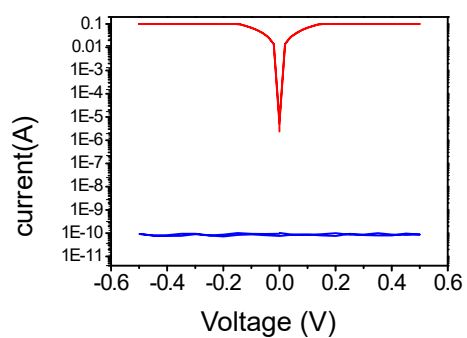


Figure S3. The typical I - V curve of sole PEDOT: PSS (red line) and sole ion gel (blue line).

Figure S4

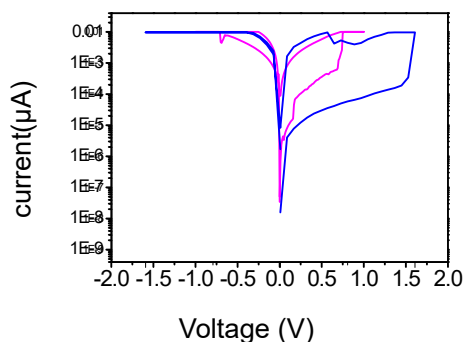


Figure S4. The typical I - V curve of device under varied ion gel recipe (composed of 1-ethyl-3-methylimidazolium bis(trifluoromethyl sulfonyl)imide ([EMIM][TFSI]) ion liquid, poly(ethylene glycol) diacrylate (PEGDA) monomers and 2-hydroxy-2-methylpropiophenone (HOMPP) photo-initiator in a weight ratio of 1.72:0.4:0.12 (pink curve) and 4.5:0.4:0.12 (blue curve))

Figure S5

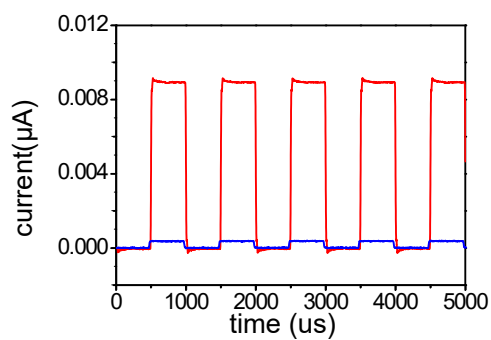


Figure S5. The pulse voltage posed on the device and the corresponding I - t curve

Figure S6

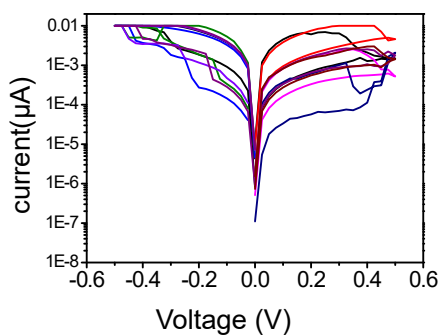


Figure S6. The typical I - V curve of device under varied compliment currents

Figure S7

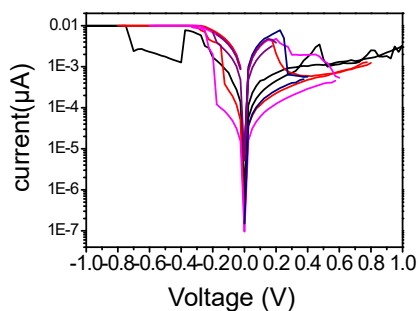


Figure S7. The typical I - V curve of device under varied sweep range (-1~1V, -0.8V~0.8V, -0.6V~0.6V, -0.4V~0.4V)

Figure S8

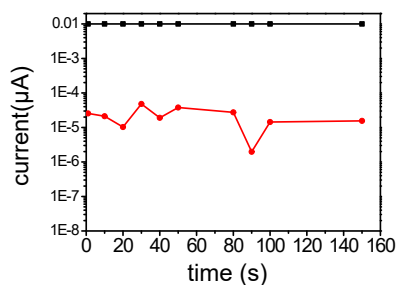


Figure S8. The endurance of over 200 cycles under the 100 μ s/2 V programming pulses and 100 μ s/0.3 V read pulses, with a 1.8 ms wait time between each program and read pulse.

Figure S9

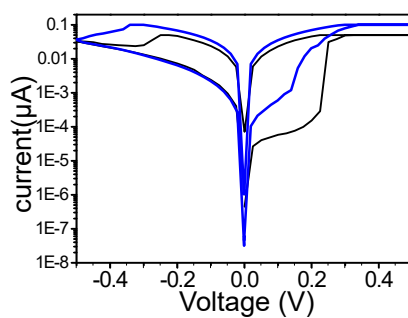


Figure S9. The typical $I-V$ curve of device Ag/PEDOT/Pt in fresh state (blank line) and for four months (blue line).

Figure S10

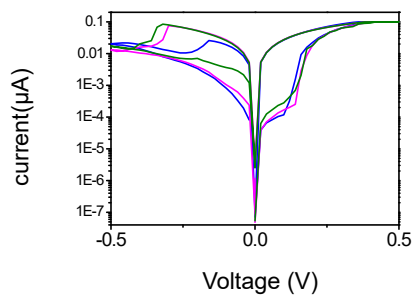


Figure S10. The typical $I-V$ curve of device with free-standing state, compressing state (50 kPa) and recovery state after experiencing pressure.

Figure S11

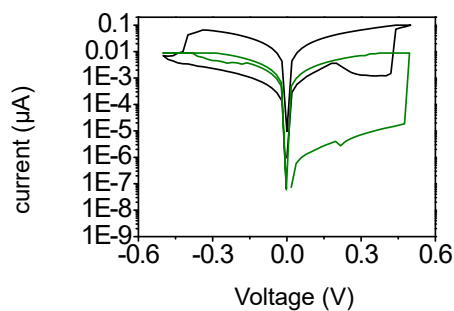


Figure S11. The typical $I-V$ curve of device with of memorisistor Pt/PEDOT:PSS-ion gel/Au (green line) and Pt/PEDOT:PSS-ion gel/Au (blank line)

Figure S12

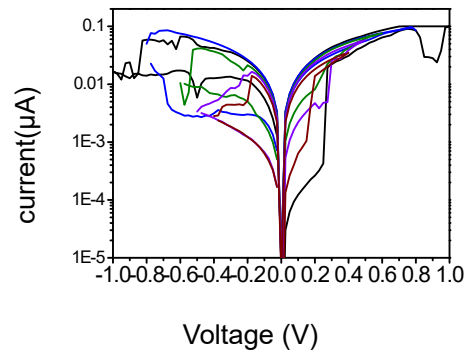


Figure S12. The typical I - V curve of device with P3HT as active material of memristor under varied sweep range (-1~1V, -0.8V~0.8V, -0.6V~0.6V, -0.4V~0.4V).