Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Flexible high-sensitivity piezoresistive sensor comprising of Au nanoribbon-coated polymer sponge

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Table S1. Mechanical properties of the PU sponge.

Sample	original PU sponge	PU sponge after chemical treatment	PU sponge after Au coating
Young's Modulus/KPa	29	4.8	5.1
Stress at 50% Strain/ KPa	3.1	1.3	1.4

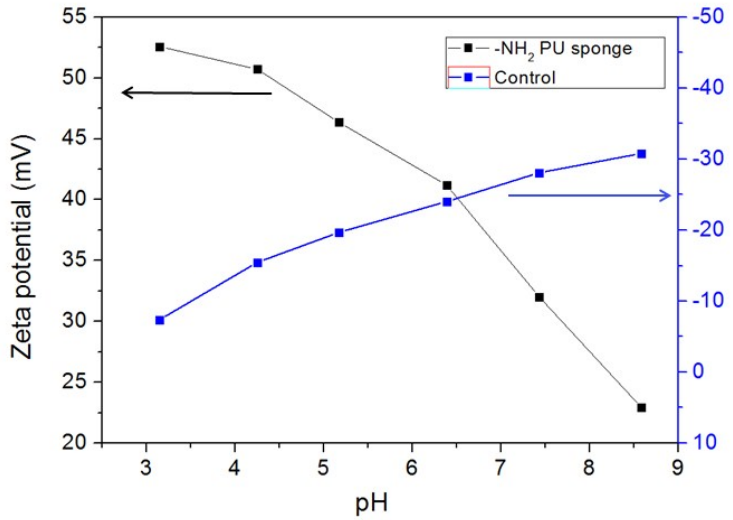

Fig. S1. pH-dependent zeta potential of PU sponge before and after amine functionalization. The surface zeta potential of the PU sponge as a function of pH was measured using a Zeta PALS (Brookhaven Instrument Corp.). Before amine fuctionalization, the surface charge of PU sponge is negative, while after fuctionalizetion it was highly positive, indicating successful introduction of amine groups on the sponge surface**.**

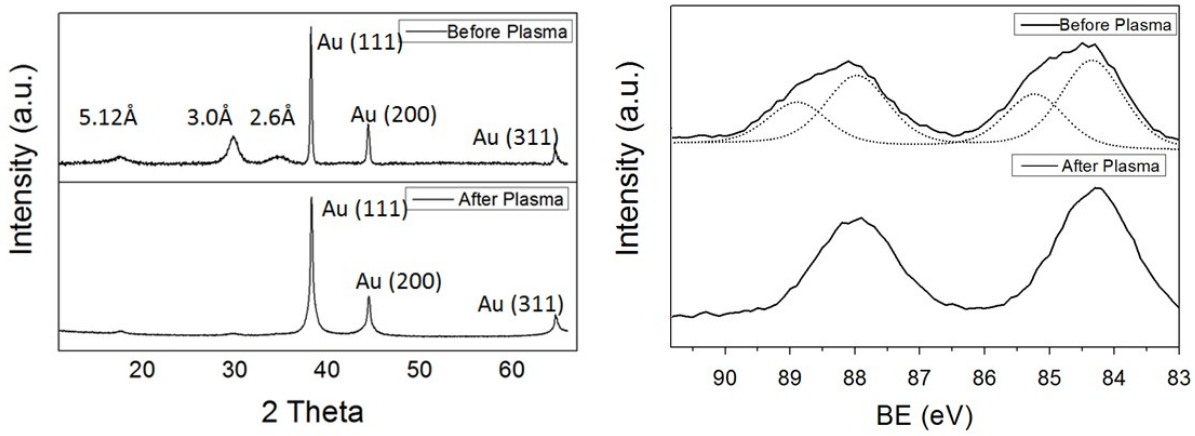

Fig. S2. Effect of plasma treatment on gold species. A. XRD spectra showing the elimination of ionic species assigned to Au^{I} [1]**; B.** XPS spectra highlighting the superimposed peaks of Au^{I} and Au^{0} before plasma treatment.

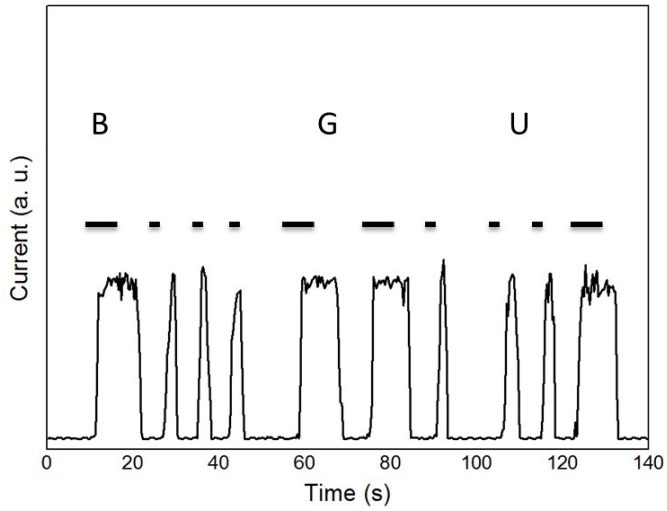

Fig. S3. Temporal and static signals produced by touching the sensor with a finger, representing the signals of "BGU" in *Morse* code. The current curve was measured under a constant bias of 1V.

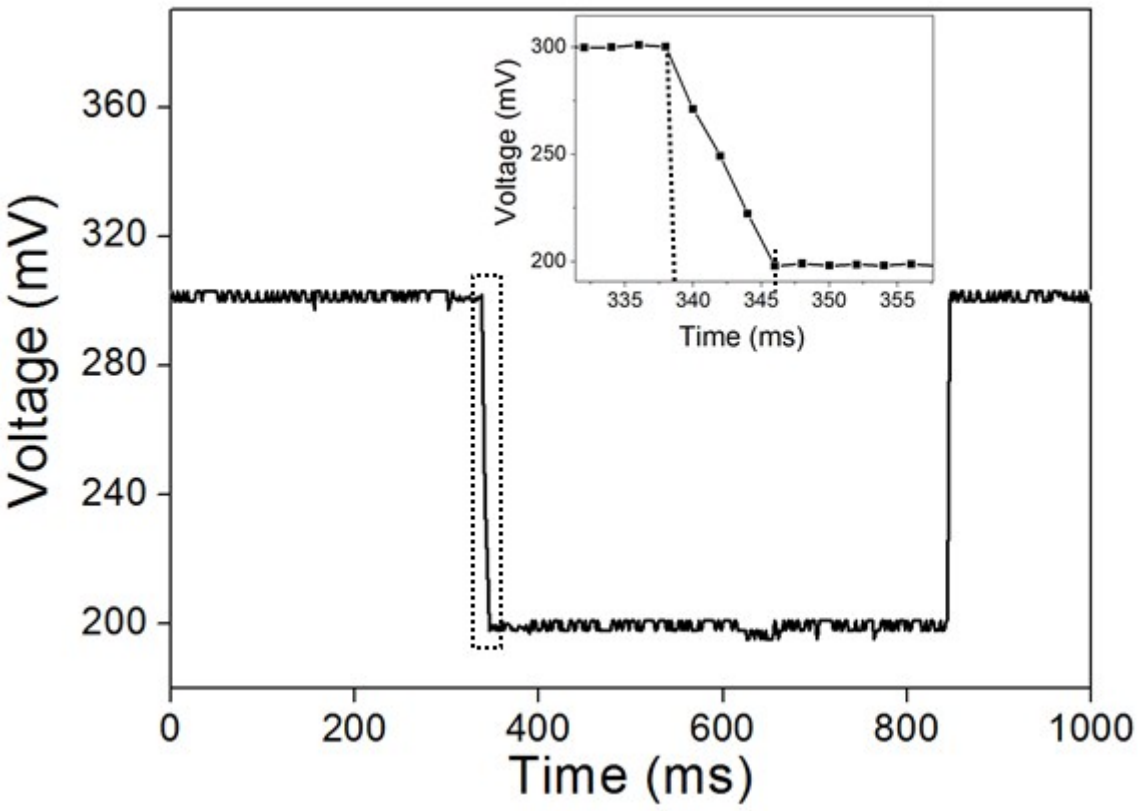

Fig. S4. Response time of the pressure sensor with an applied pressure of 100 Pa. Response time was recorded on an oscilloscope (Tektronix TDS 1002B). The inset shows the section of the curve within the dashed lines which corresponds to the application of pressure. The response time was 8 ms.

References

[1] A. Morag, N. Froumin, D. Mogiliansky, V. Ezersky, E. Beilis, S. Richter and R. Jelinek, *Adv. Funct. Mater.*, 2013, 23, 5663.