Supporting Information

A nanofiber based artificial electronic skin with high pressure sensitivity and 3D conformability

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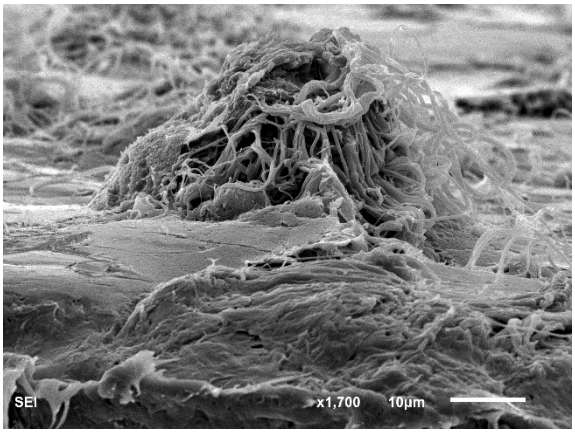

Figure S1. Cross-section image of an ordered array of microscale nanofibrous protuberances appeared as semi-spheroids. (The height of the protuberance is estimated to be 30 μm)

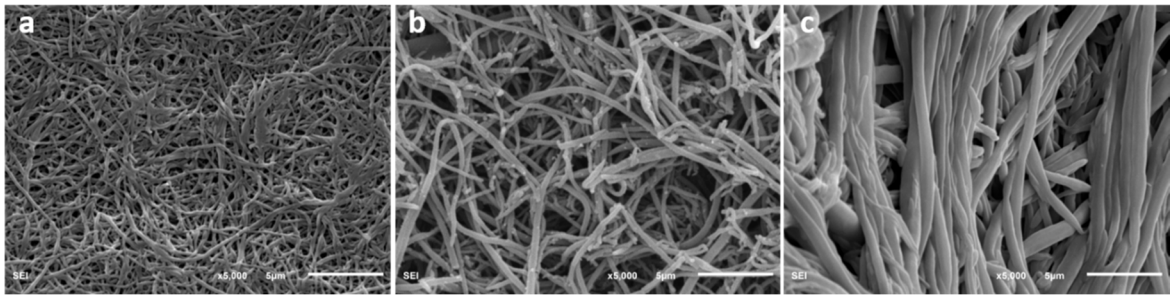

Figure S2. SEM images of (a) pure PVA-*co*-PE, (b) PPy@PVA-*co*-PE and (c) pure POE nanofibers. The diameter of PVA-*co*-PE, POE nanofiber are esimated to be 100-200 nm and 700-800 nm, respectively.

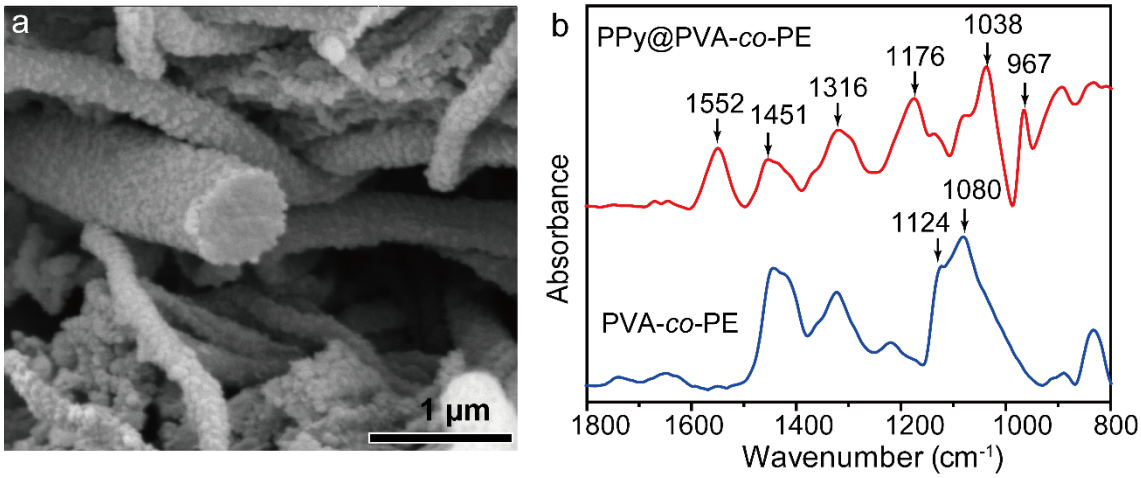

Figure S3. Cross-section SEM image of (a) PPy@PVA-*co*-PE membrane (high magnification), and (b) FTIR spectrums of PVA-*co*-PE and PPy@PVA-*co*-PE membrane, indicating a coating structure of PPy on PVA-*co*-PE nanofibers.

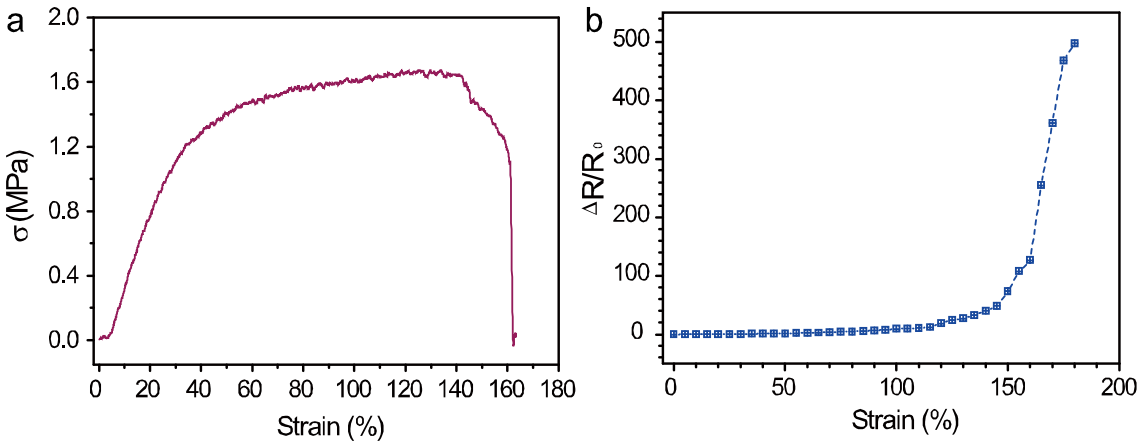

Figure S4. Mechanical and electrical properties of PPy@ PVA-*co*-PE/POE membrane: (a) The tensile stress-strain curve with a stretching rate of 10mm/min, and (b) Relative change in resistance versus stretching strain. The PPy@ PVA-*co*-PE/POE membrane exhibits a very high elastic stretchability and fracture strain by ~40% and ~140%. The estimated elastic modulus is about 4.0 MPa, which is a little higher that of the typical low-modulus polydimethylsiloxane (PDMS) elastomer (elastic modulus ~ 1.8 MPa and elongation of up to 160%). Moreover, the resistance response to a strain remains invariant even up to a stretching strain of 100%, implying continous conduction pathways in the PPy@ PVA-*co*-PE/POE network, which is ascibed to the self-organized allignment of interwinted conductive nanofibers in the porous scaffold over stretching process.

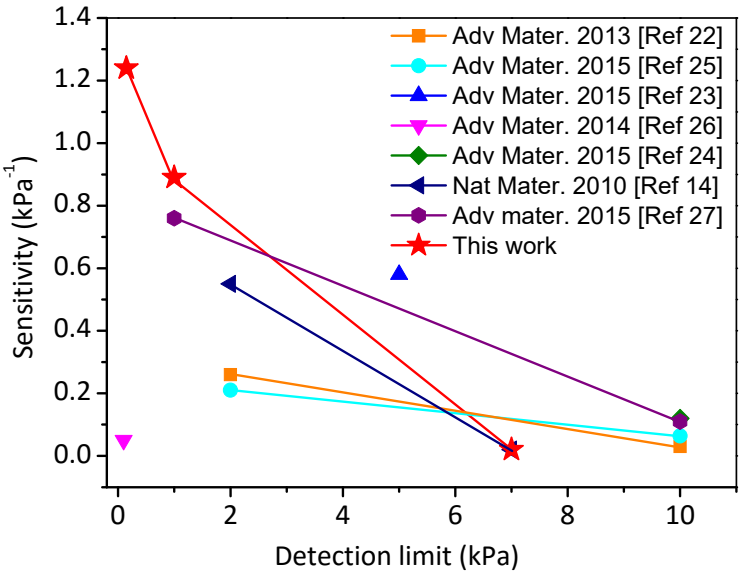

Figure S5. Performance comparison of different types of pressure sensors up to now with the pressure below 10 kPa. Here, the curves are plotted with the pressure limit of the representative sensor as the X axis and the corresponding sensitivity as Y axis.

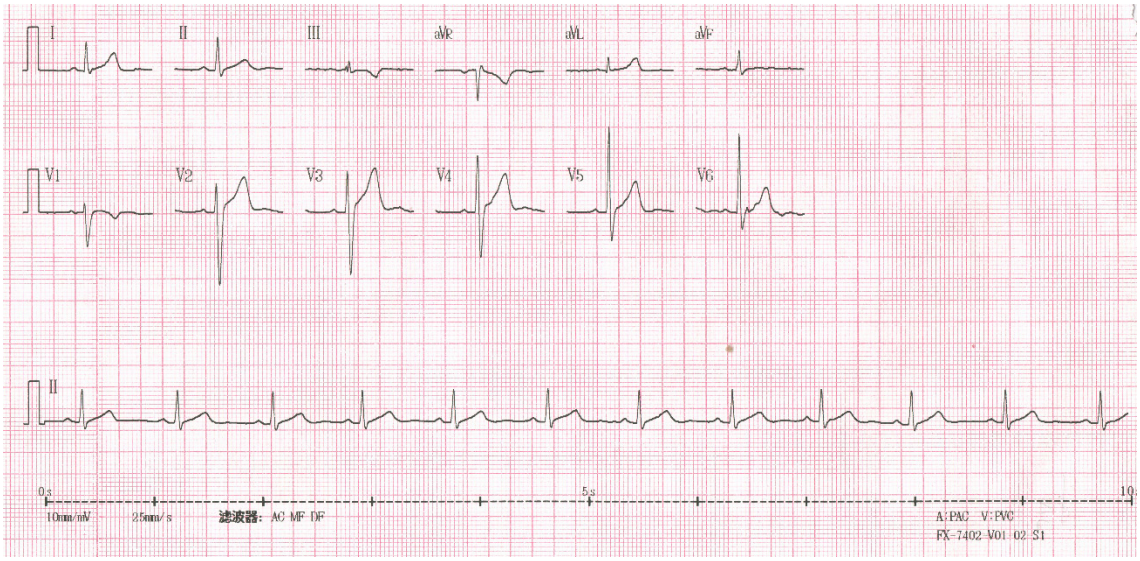

Figure S6. The Electrocardiogram (ECG) curve acquired in our campus hospital for comparison with the measured SPG curve for the same person.