Electronic Supplementary Information

High-Performance Capacitive Strain Sensors with Highly Stretchable Vertical Graphene Electrodes

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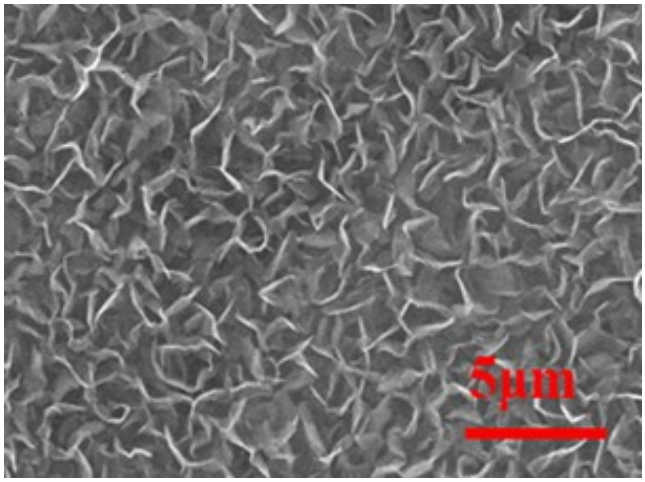

Fig. S1. The SEM top view of the VGr/wafer

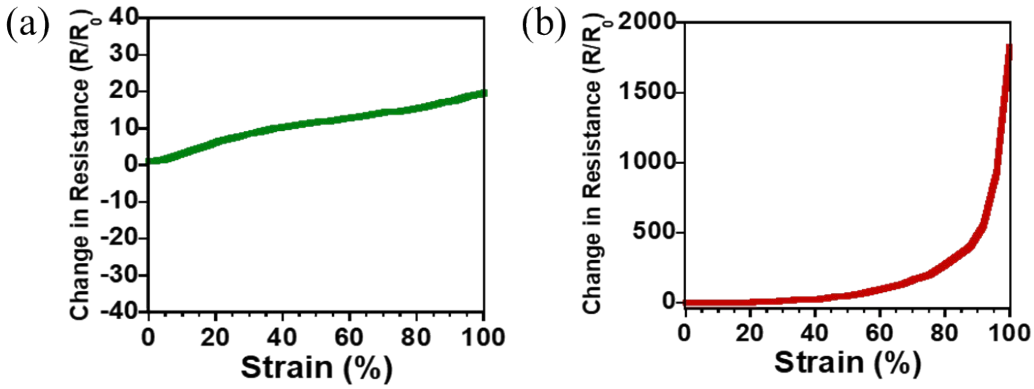

Fig. S2. (a) The $\Delta R/R_0$ with respect to strain for VGr peeled with CP method. (b) The $\Delta R/R_0$ with respect to strain for VGr peeled with UP method.

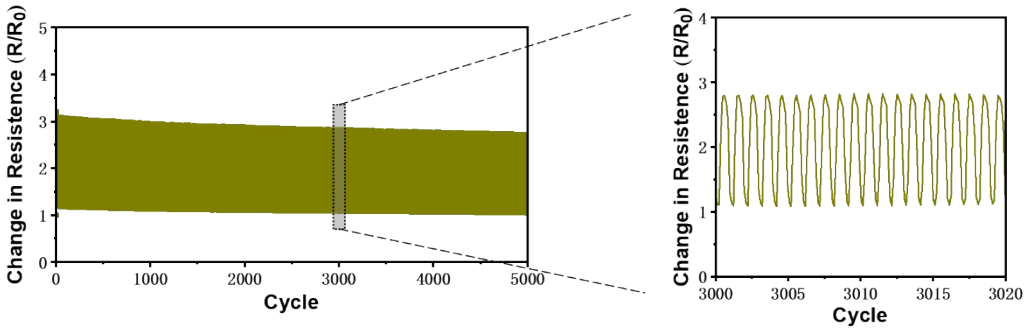

Fig. S3. The 5000 cycles test of PDMS/CP-VGr electrode at 20% strain

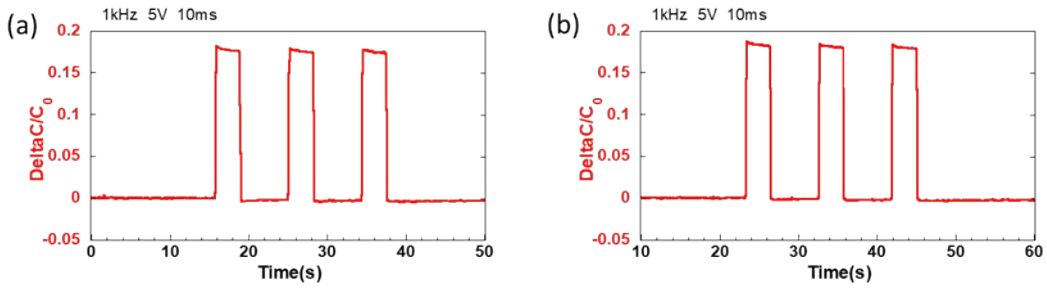

Fig. S4. The ΔC/C0 for the capacitive strain sensors with 20μm (a) and 70μm (b) dielectric thickness.

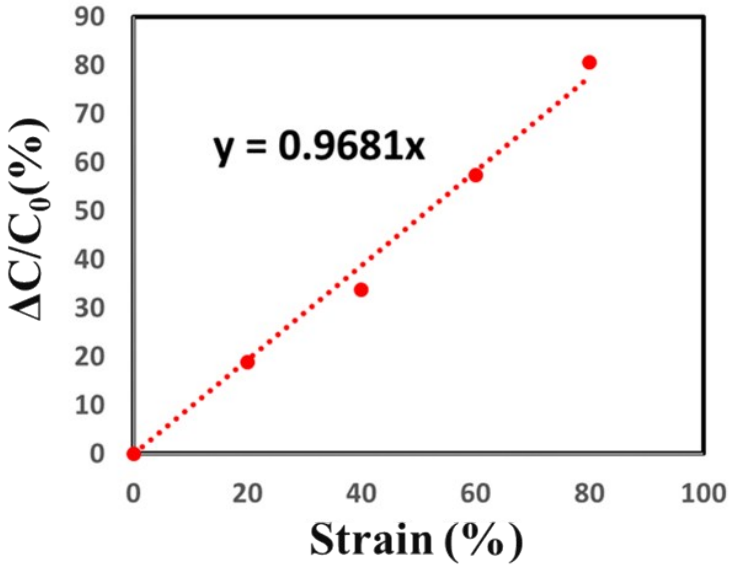

Fig. S5. The relative capacitance variation fit line of capacitive strain sensor. Base on the fit line (y=0.9681x), the GF of capacitive strain sensor based on PDMS/VGr electrode is around 0.9681.

The calculate equation of sheet resistance R_S:

$$R_S = \frac{RW}{L} \quad (1)$$

where R represents resistance, W represents the width of PDMS/VGr electrode, and L represents the length of PDMS/VGr electrode.

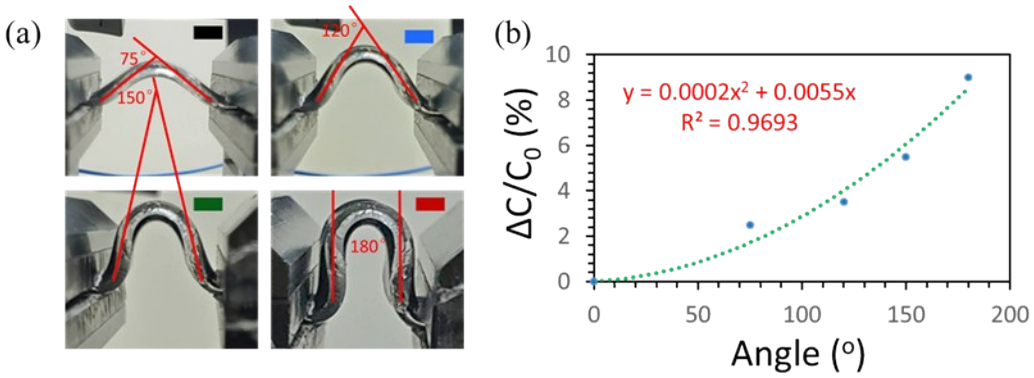

Fig. S6. (a) The bend angle of the sensor. (b) The relationship between the ΔC/C0 and the bend angle.