Ultra-stretchable graphene aerogels at ultralow temperatures

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Supporting Figures

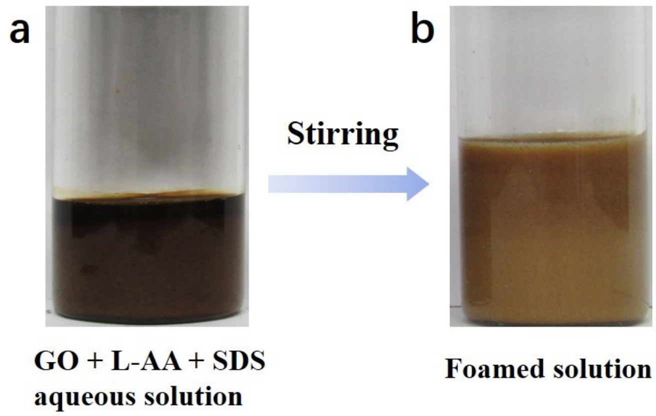

Fig. S1. The foaming process of GO aqueous solution. (a) GO aqueous solution with L-ascorbic acid (L-AA) and sodium dodecyl sulfate (SDS). (b) Foamed GO solution with a lot of microbubbles prepared from (a) after stirring.

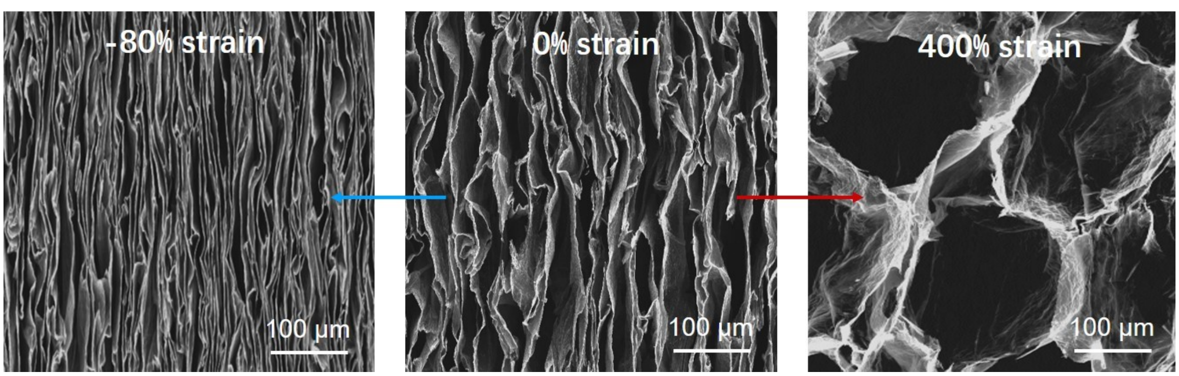

Fig. S2. SEM images of CAGA at 0% strain, -80% strain, 400% strain, respectively.

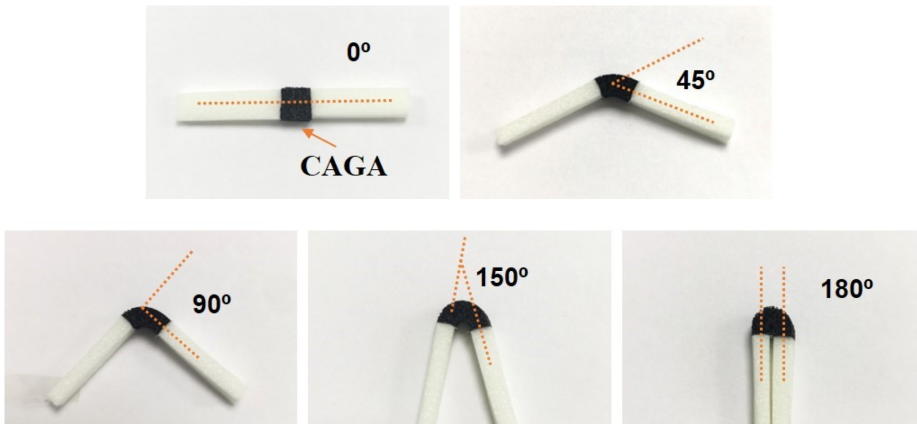

Fig. S3. The bending process of the CAGA with different bending angles.

Fig. S4. The stretching and recovery process of CAGA ring assisted by the injection device with a rubber tubing.

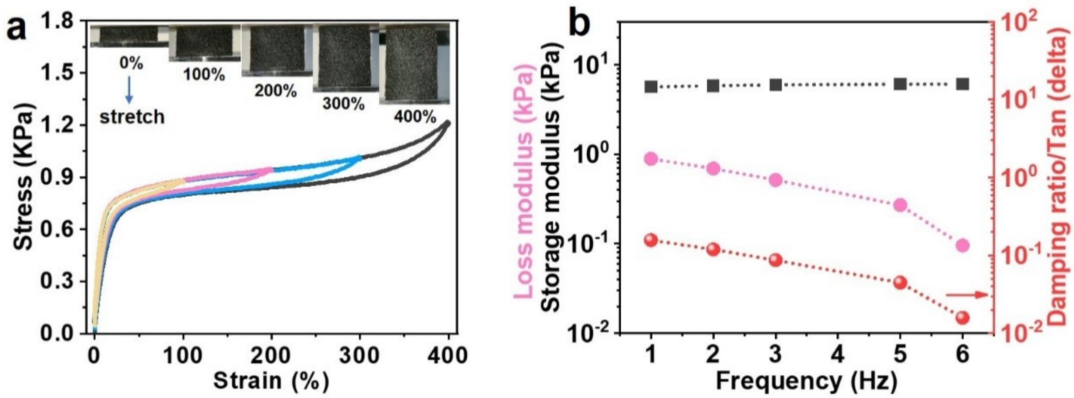

Fig. S5. (a) Cyclic tensile stress-strain cures of CAGA with different maximum strains and their corresponding experimental photographs. (b) Storage modulus, loss modulus and damping ratio curves of CAGA at 400 % tensile strain as function of frequency.

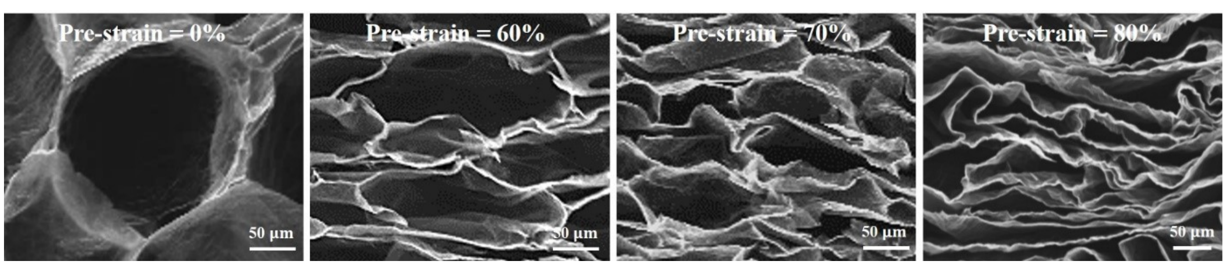

Fig. S6. SEM images of the CAGAs prepared by the compress-annealing at pre-strain of 0%, 60%, 70%, 80%, respectively.

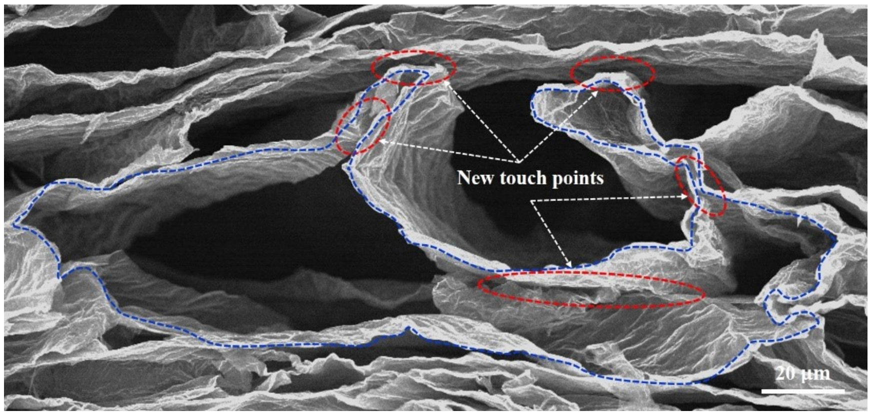

Fig. S7. Enlarged SEM image of the cross section of CAGA with many new touch points compared with that of PrGA.

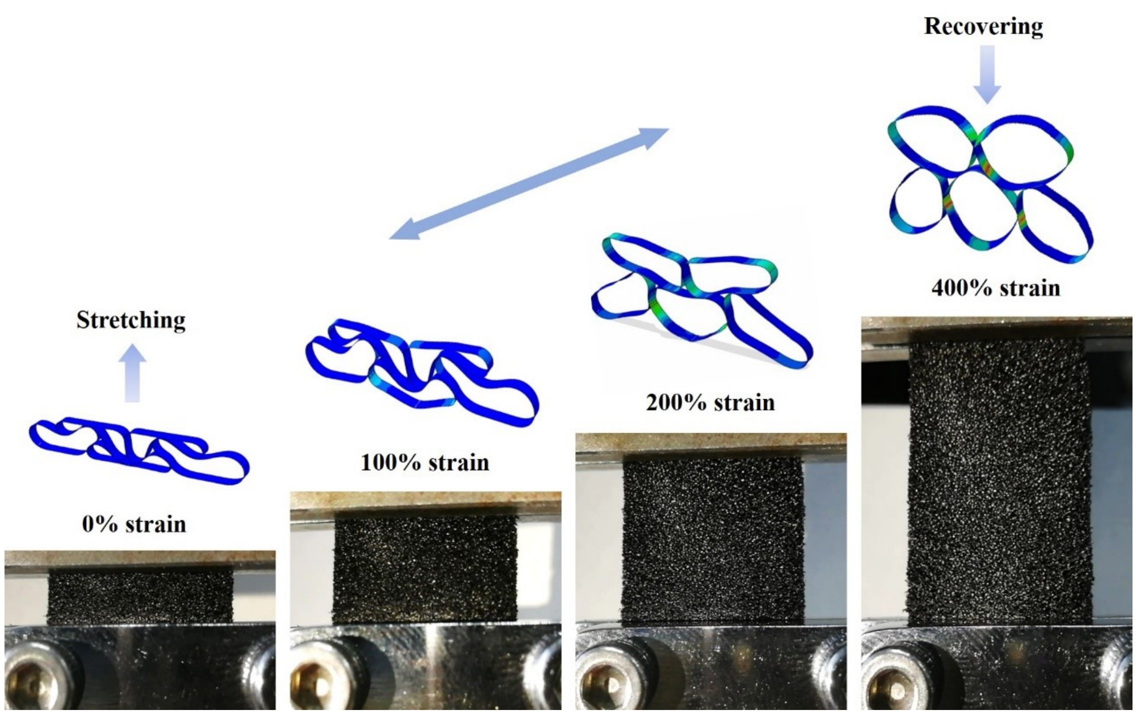

Fig. S8. The FE simulation and enlarged photographs of the stretching process of CAGA.

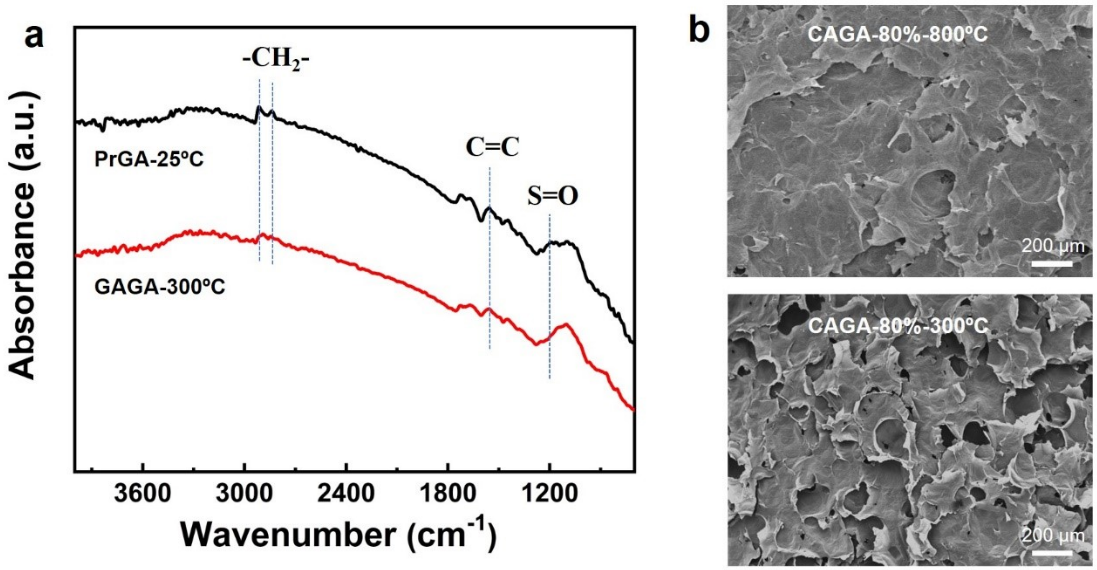

Fig. S9. (a) IR spectra of PrGA-25 ºC and CAGA-300 ºC. (b) SEM images of the fracture surfaces of CAGA-80%-800ºC and CAGA-80%-300ºC, respectively.

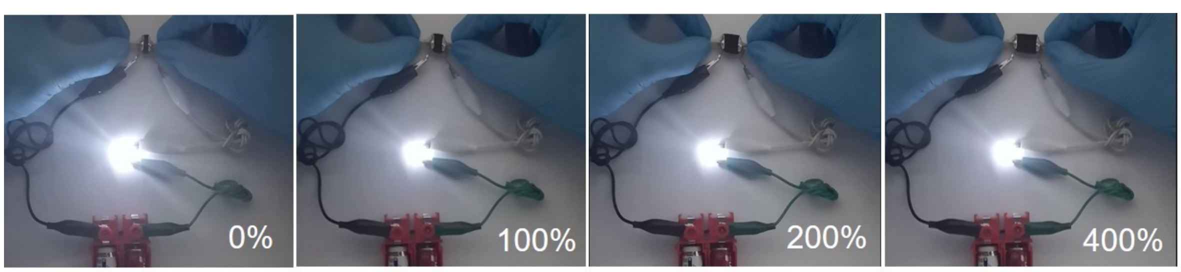

Fig. S10. The brightness variation of a LED lamp when the CAGA acting as an electrical conductor in closed circuit during stretching process, showing unchanged brightness from 100% to 400% tensile strain.

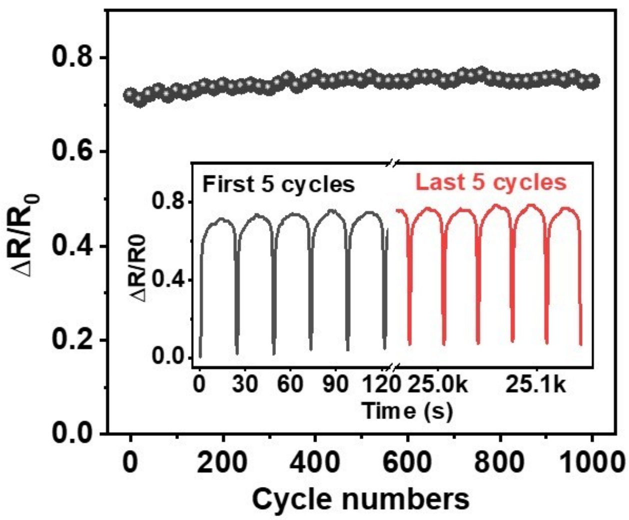

Fig. S11. The resistance variation rate of CAGA during long stretching-release cyclic tests for 1000 cycles at 400% strain.

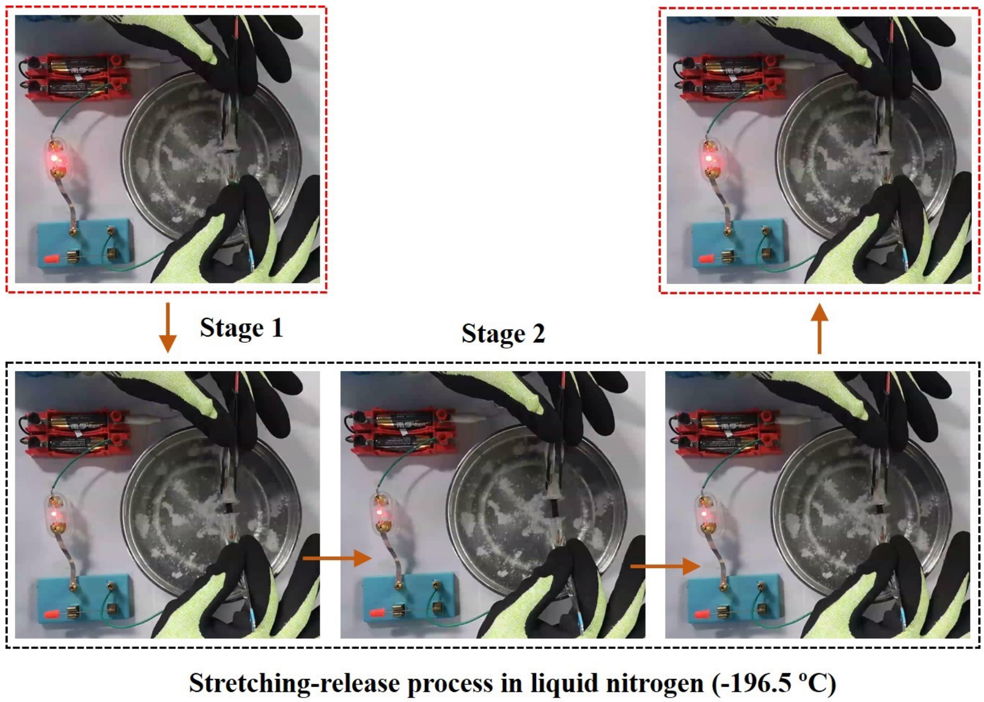

Fig. S12. Stretching-release tests of the CAGA as an electrical conductor in the liquid nitrogen with a temperature of -196.5 ºC. The LED lamp has weakened brightness at initial deformation (stage 1) and unchanged brightness at large deformation (stage 2).