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

Supporting Information

Embedded Printing of Graphene Sponge Sensors for Sleep Monitoring

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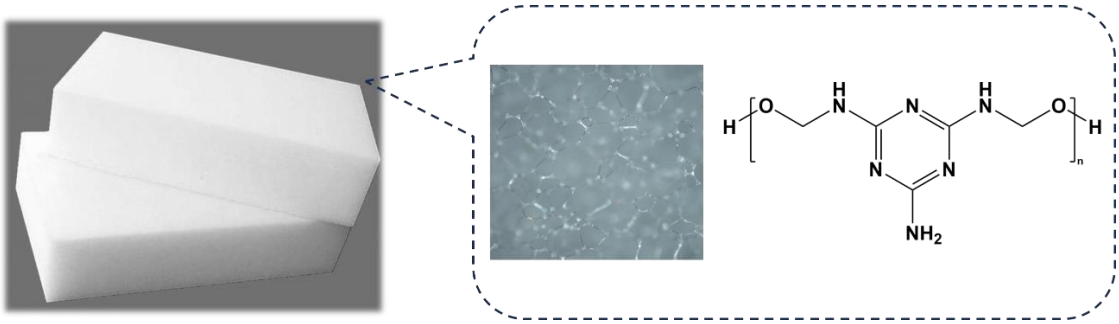

Figure S1. Micromorphology and chemical structure of melamine sponge.

The sponge is a melamine sponge (MS) with a porosity of over 99%, a pore size of about x102um and an interlinked polymer backbone. The surface of the sponge is distributed with a wide range of nanometer-sized capillary open-pore structures, as well as an abundance of amino, hydroxyl, and other chemically functional groups.

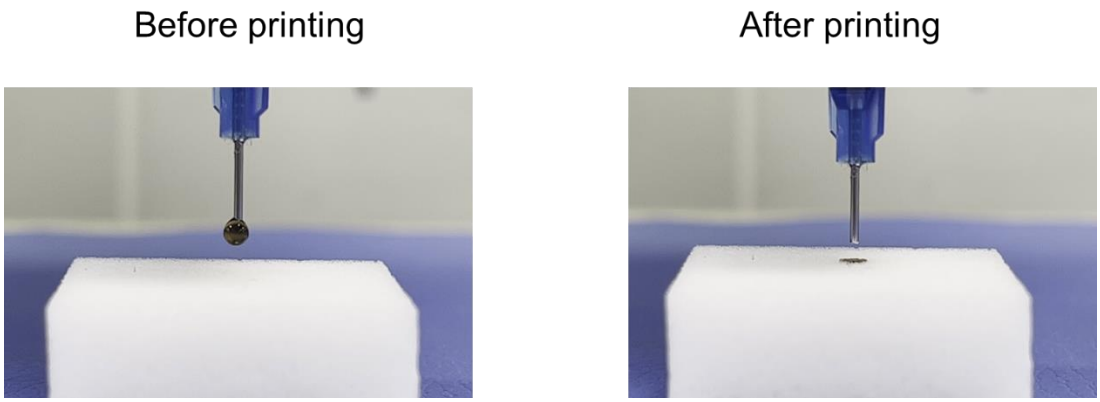

Figure S2. Before and after printing aqueous solution on the sponge surface.

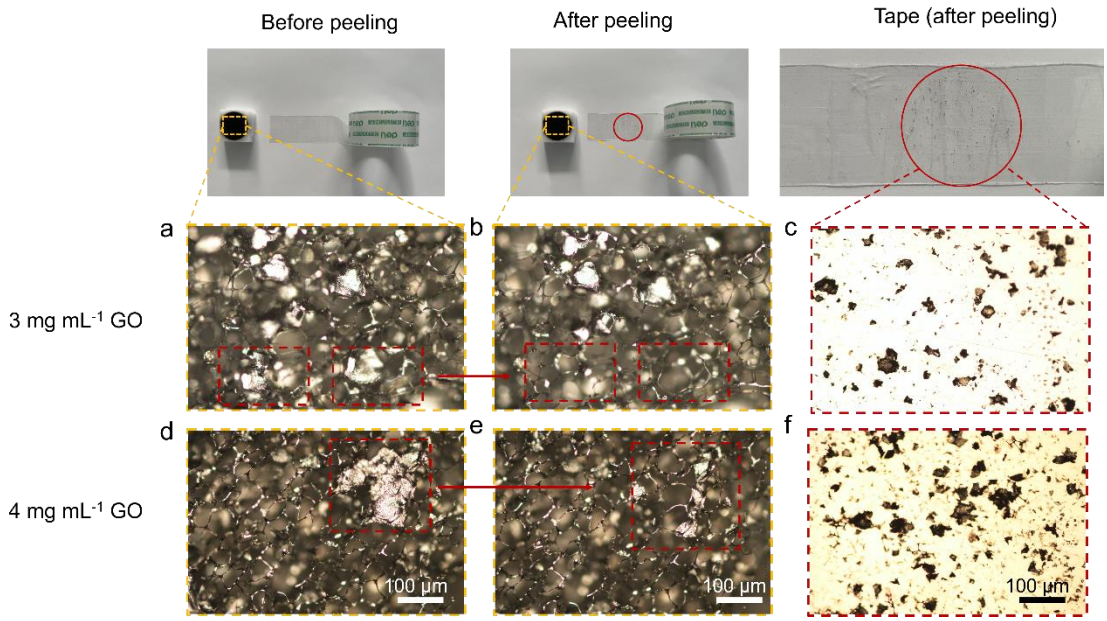

Figure S3. Tape peeling experiments of GNCP sponges with different GO concentrations. (a) Microscope photograph of GNCP sponges (with 3 mg mL^{-1} GO) before peeling. (b) Photomicrograph of 3 mg mL^{-1} of GO after peeling. (c) Microscope photograph of the tape used for the peeling of GNCP sponges (with 3 mg mL^{-1} GO). (d) Microscope photograph of GNCP sponges (with 4 mg mL^{-1} GO) before peeling. (e) Photomicrograph of 4mg mL^{-1} of GO after peeling. (f) Microscope photograph of the tape used for the peeling of GNCP sponges (with 4 mg mL^{-1} GO).

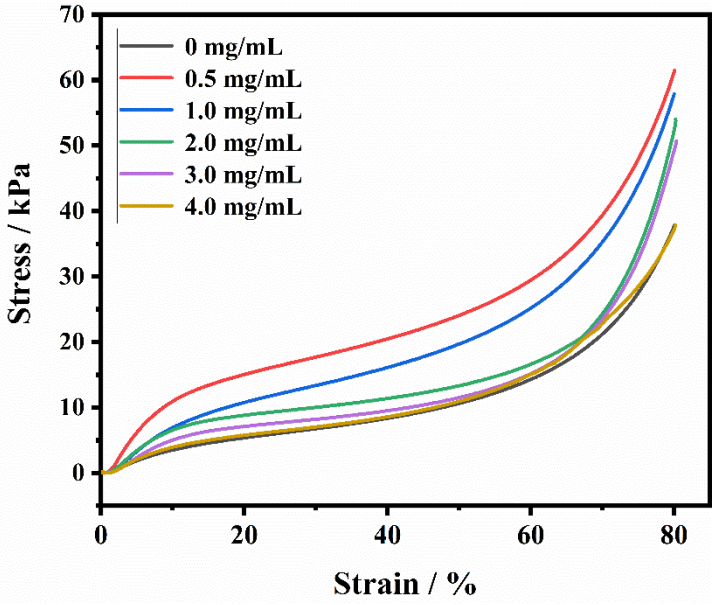

Figure S4. Compressive stress-strain curves of GNCP sponges with different GO concentrations.

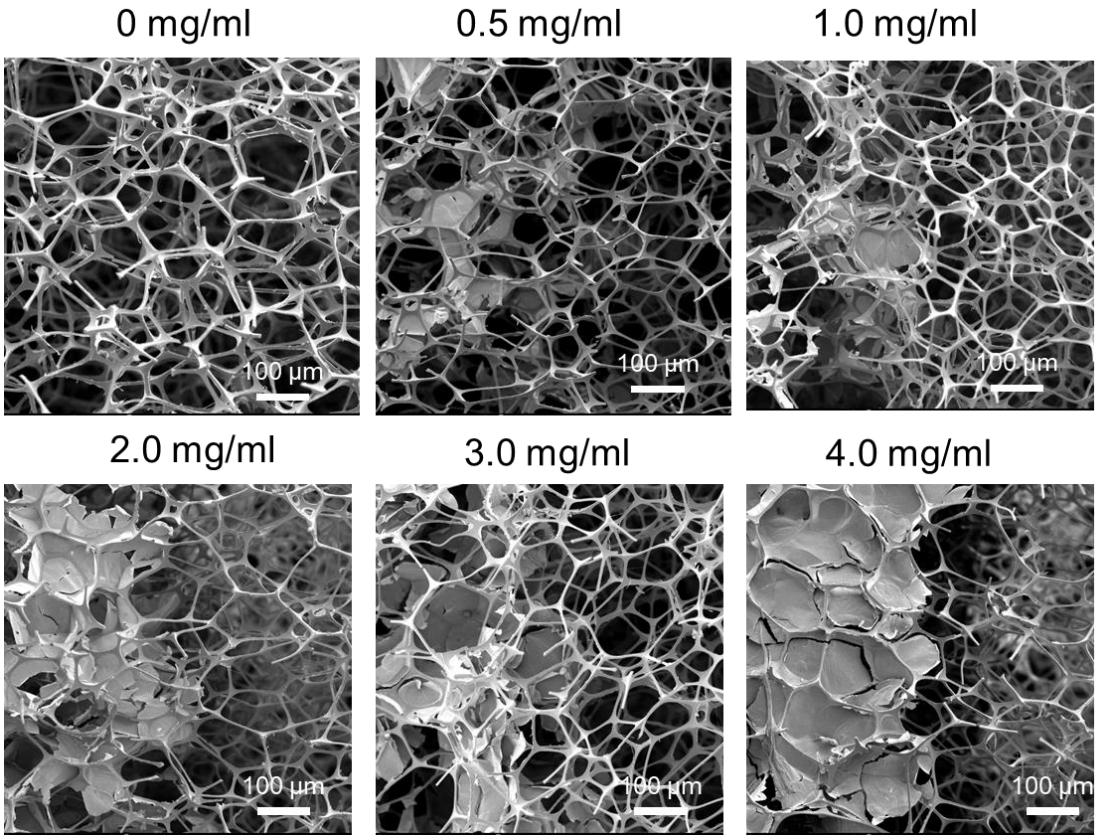

Figure S5. SEM images of print paths formed by embedded printing of different concentrations of GO ink.

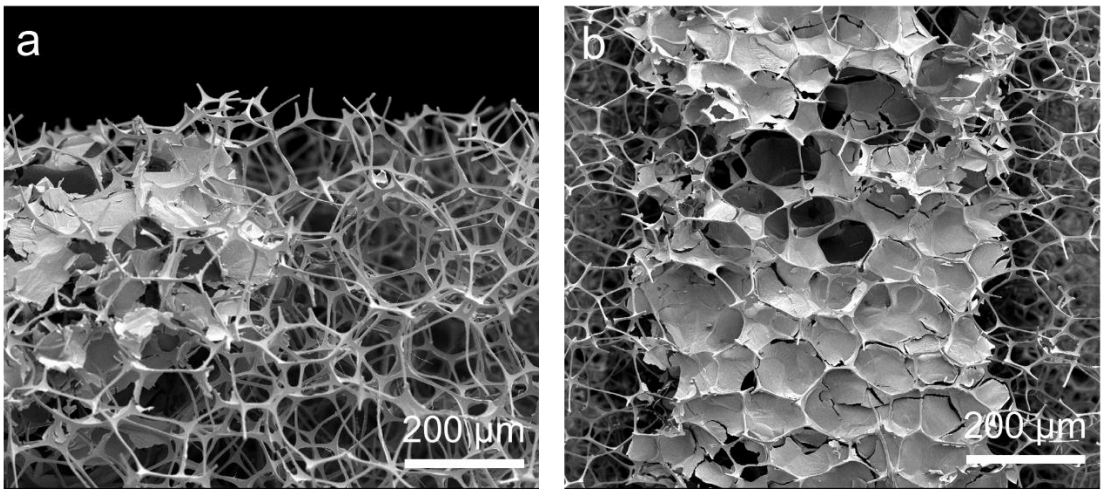

Figure S6. SEM images of the cross-section (a) and surface (b) of a GCNP sponge formed by embedded printing of high GO concentrations (4 mg/ml).

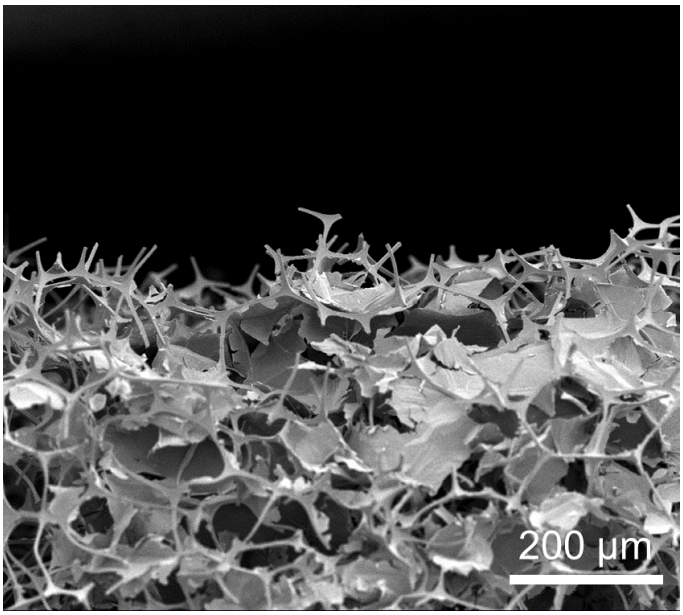

Figure S7. SEM image of the cross-section of the GCNP sponge formed by embedded printing with 3 mg/ml of GO ink.

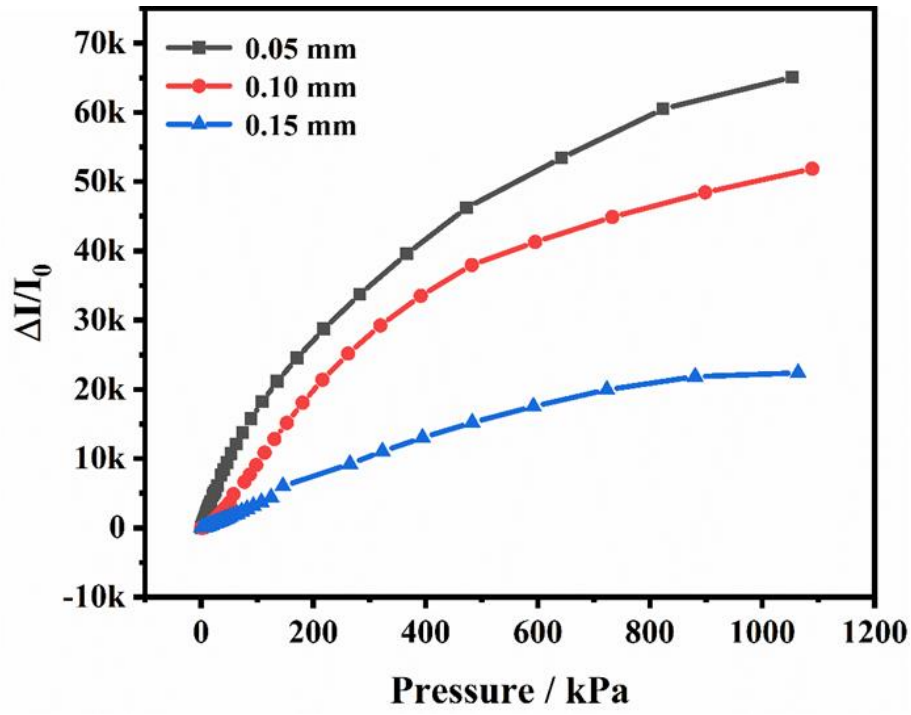

Figure S8. The relative current variation curves of GNCP sponge prepared from PET spacers with different thicknesses.

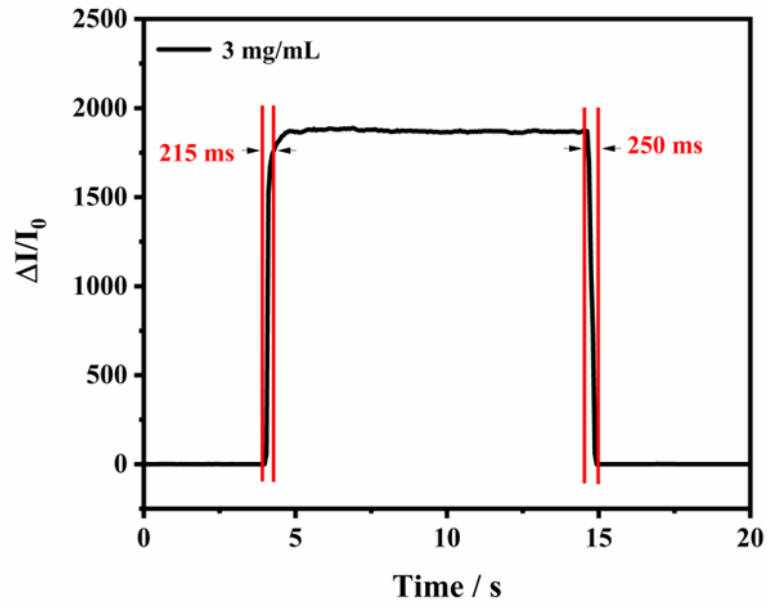

Figure S9. Response - recovery time of the sensor prepared with a concentration of 3mg mL^{-1} GO dispersion.

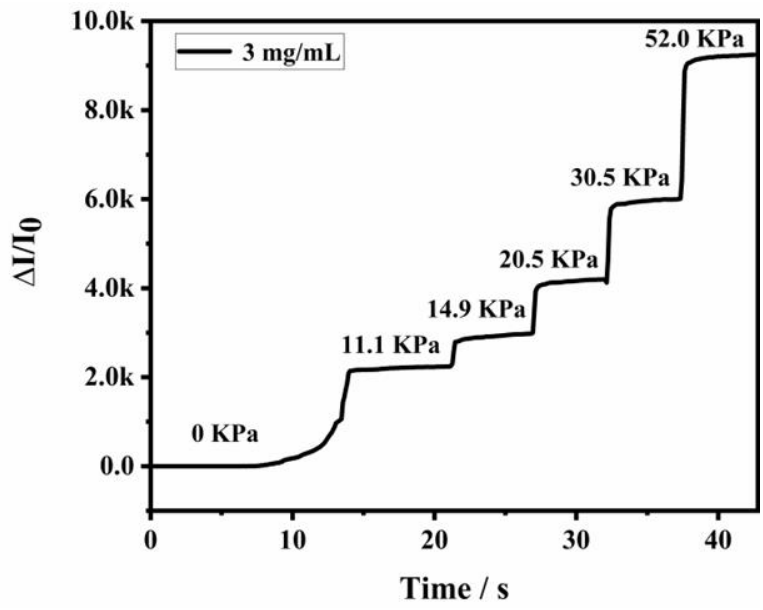

Figure S10. The relative current change of the GNCP sponge sensor under stepwise pressure.

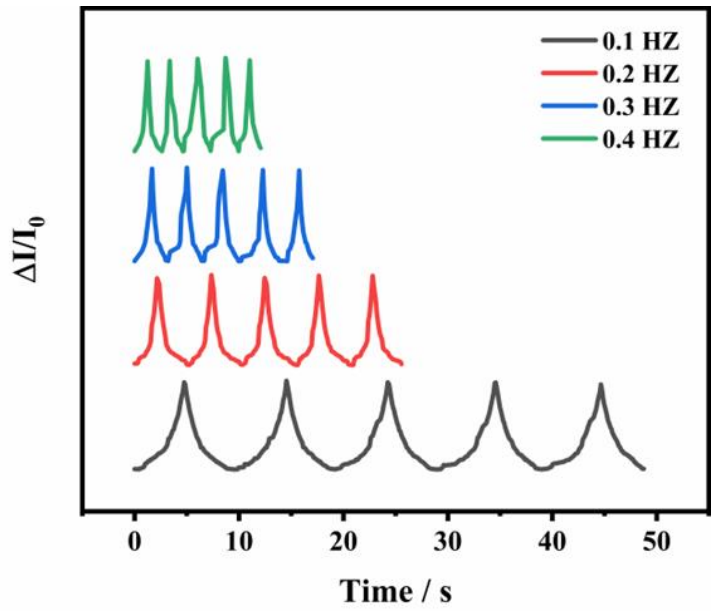

Figure S11. Relative current change of the sensor during 5 cycles of loading-unloading at different compression rates.

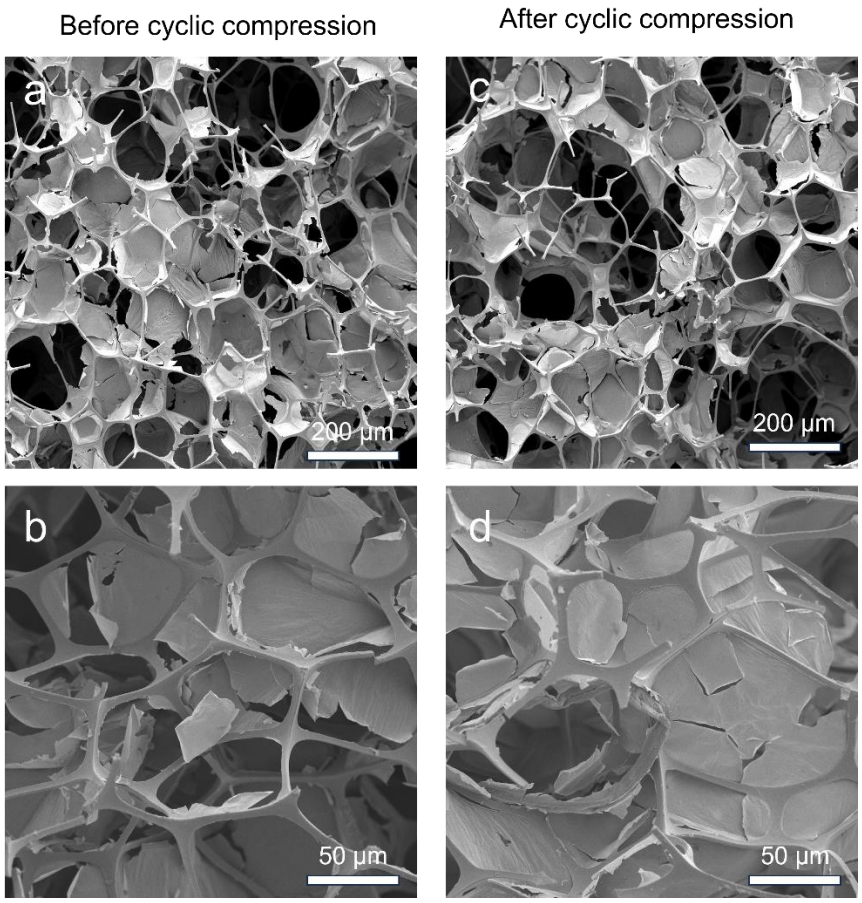

Figure S12. The SEM images of GNCP sponge at different magnifications before and after cyclic compression.