

Electronic Supplementary Information (ESI) for

## **Direct drawing of high-performance capacitive sensors on copying tissues**

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## Experimental

### Pencil drawing of graphite electrode array on copying tissue

We fabricated the top and bottom electrode by simple pencil (12B) drawing on copying tissue. The electrode shape can be flexibly designed into any desired geometries. We patterned a loop- and disc-shaped electrode array for the capacitive sensor. After drawing for several times, we blew away the graphite fragments on the surface. The electrodes are ready for use.

### Preparation of paper foam as dielectric layer

Kleenex has been used as cellulose fiber source for making foam like paper dielectric layer. We first broke it into cellulose fibers in water by ultrasonic treatment for 30 min. Then, the cellulose fibers aqueous solution was mixed with GO aqueous solution (prepared by Hummers' method) and casted onto a fluorinated silane treated glass. The foam structure would form after freeze-drying. We further peeled off the porous paper foam from glass and pressed the foam for use as dielectric layer.

### Fabrication of the capacitive sensor

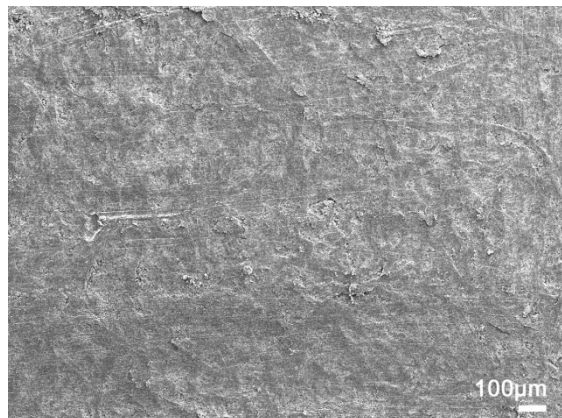
The capacitive sensor was fabricated by sandwiching the dielectric layer between the loop- and disc electrode arrays. The drawn graphite electrodes were connected with silver wire by silver glue.

### Characterization

The capacitance was recorded by the GWINSTEK LCR-6200. SEM images were obtained using a JEOL JSM-7500 field-emission scanning electron microscope (FE-SEM). Raman spectrum was performed by HOARIBA, LabRAM HR Evolution.



**Fig. S1** Photograph of a copying tissue sheet on a general paper printed with Jilin University.



**Fig. S2** SEM image of the graphite electrode after pressing for hundreds of times.

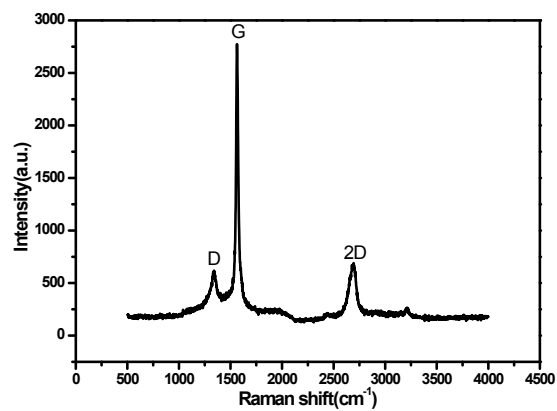


Fig. S3 Raman spectrum of the pencil drawn graphite electrodes.

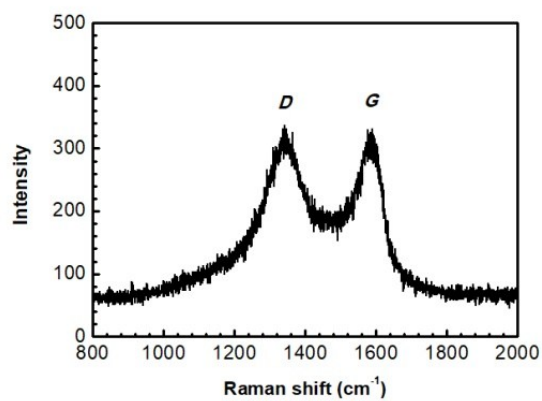


Fig. S4 Raman spectrum of GO&fiber foam.

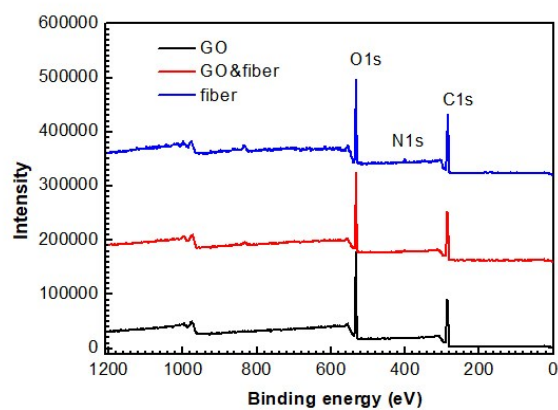


Fig. S5 XPS spectra of GO, GO&fiber foam, and cellulose fiber.

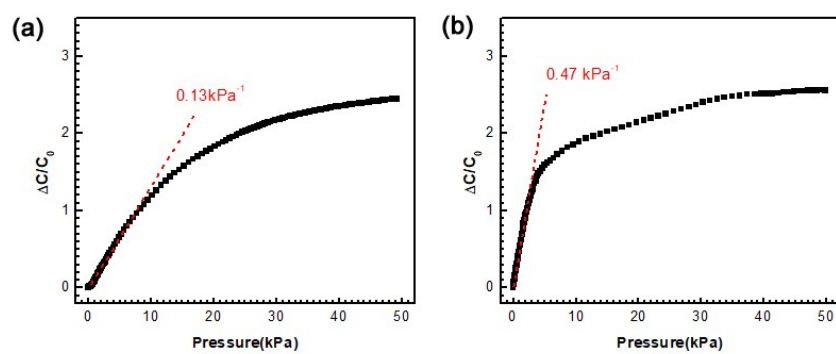


Fig. S6 Capacitive response of sensors based on (a) printing paper and (b) newspaper as a function of pressure.