Electronic Supplementary Information for

Rapid-response, reversible and flexible humidity sensing platform using a hydrophobic and porous substrate

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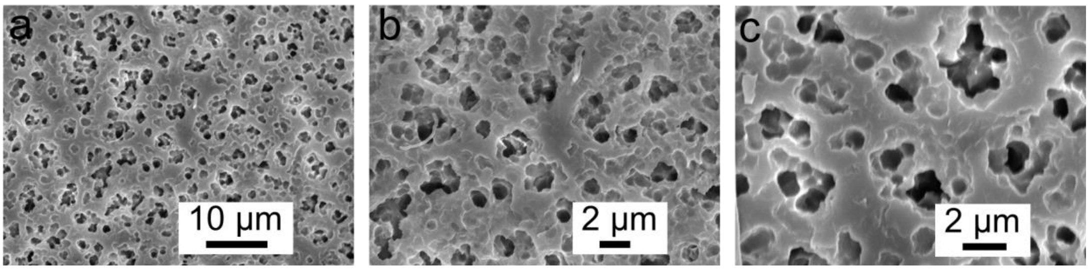
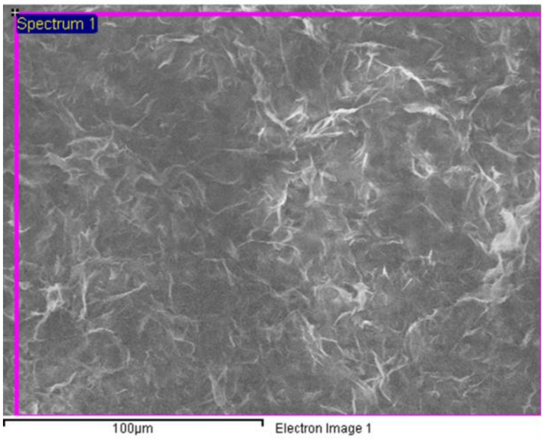
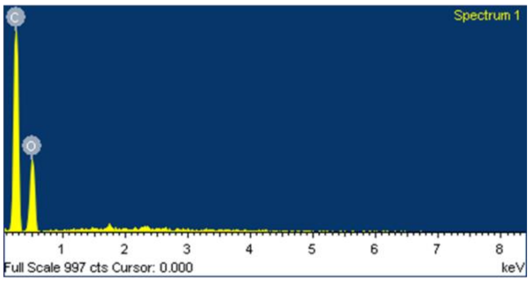


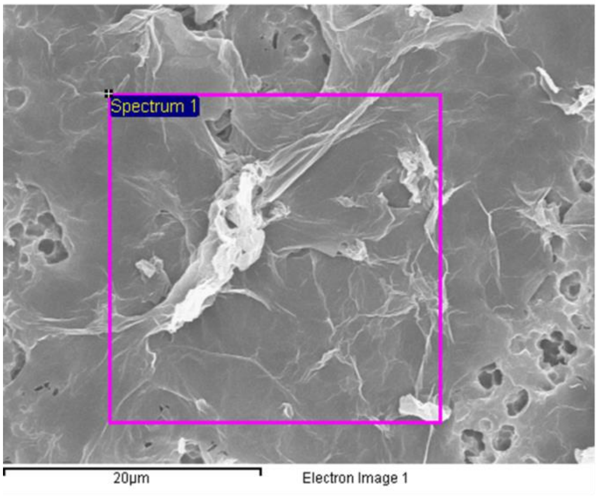
Figure S1. SEM images of the LCP substrate with increased magnification from (a) to (c).

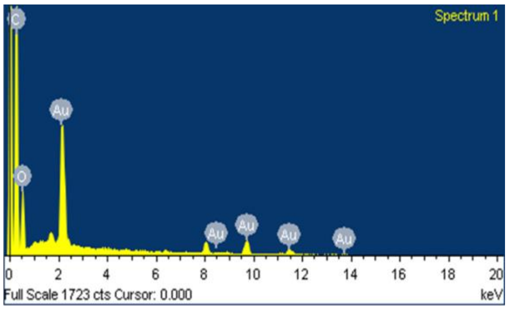




Element	Weight%	Atomic%
C K	56.50	63.37
O K	43.50	36.63
Totals	100.00	

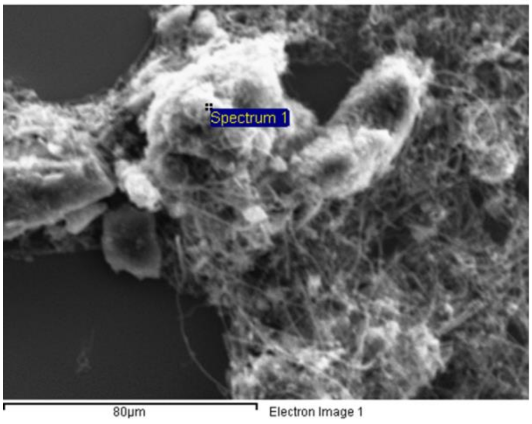
Figure S2. Energy-dispersive X-ray (EDX) spectra of the graphene oxide (GO).

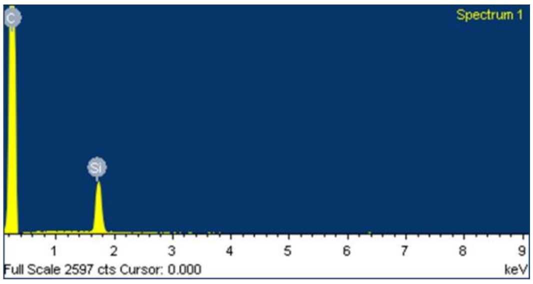




Element	Weight%	Atomic%
C K	57.09	74.62
O K	24.36	23.90
Au M	18.55	1.48
Totals	100.00	

Figure S3. EDX spectra of the reduced graphene oxide (RGO). The Au signal results from a thin layer conductive Au coating on RGO surface used for SEM characterization.





Element	Weight%	Atomic%
C K	97.18	98.77
Si K	2.82	1.23
Totals	100.00	

Figure S4. EDX spectra of carbon nanocoils (CNCs). The signal of silicon is originated from the silicon substrate.

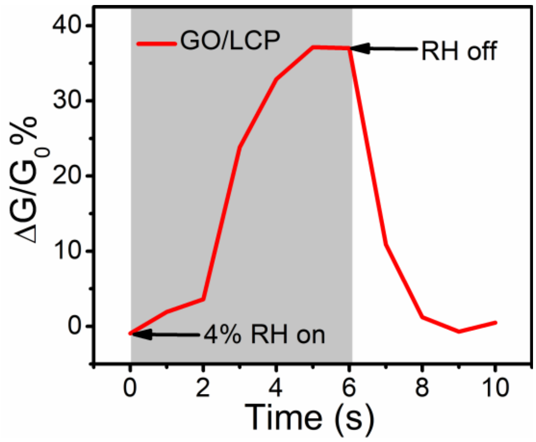


Figure S5. Dynamic response of the GO/LCP sensor to the low relative humidity (RH) of 4%.

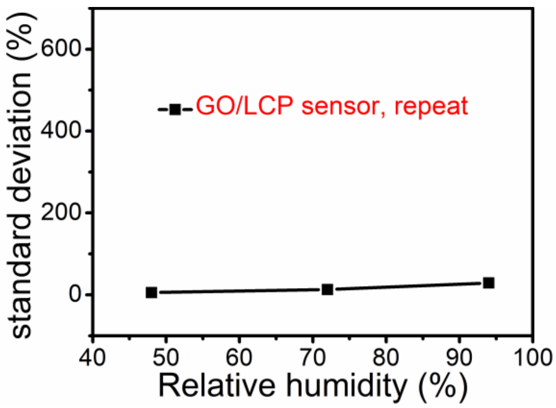


Figure S6. Plot of the standard deviation of the GO/LCP sensor versus RH for the detection of each RH with repeated five cycles.

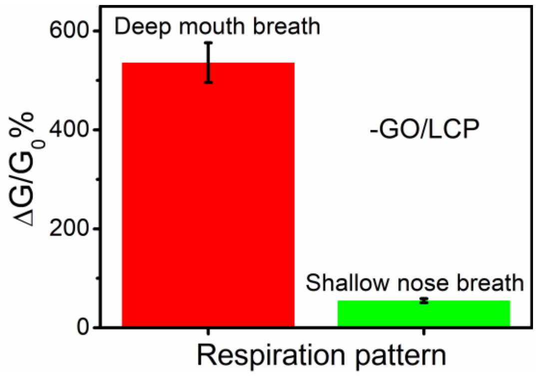


Figure S7. Comparison of the quantitative responses of the GO/CLP to the deep mouth breath and shallow nose breath.

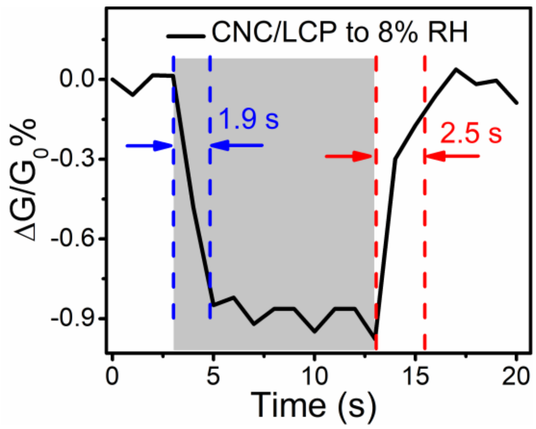


Figure S8. Analyses of the response and recovery time of the CNC/LCP sensor from the dynamic response curve to 8% RH.