

Article



## **Supporting Information**

## Impact of pH on Regulating Ions Encapsulation of Graphene Oxide Nanoscroll for Pressure Sensing

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**Figure S1.** Optical image of (GONS)<sub>0.5</sub> lines with black and light blue color. Top inset: AFM image of (GONS)<sub>0.5</sub> line with black color. Bottom inset: AFM image of (GONS)<sub>0.5</sub> line with light blue color.



**Figure S2.** Plots of heights of (a) (GONS)<sub>5</sub>, (b) (GONS)<sub>1</sub>, (c) (GONS)<sub>0.5</sub> and (d) (GONS)<sub>0.3</sub> as a function of 30 min annealing at temperature of 100 °C, 150 °C, 200 °C, 250 °C and 300 °C, respectively.



**Figure S3.** AFM height images of GONSs containing (a)  $Fe^{3+}$ , (b)  $Au^{3+}$  and (c)  $Zn^{2+}$  before annealing, respectively. AFM height images of rGONSs containing (d) FexOy NPs, (e) Au NPs and (f) ZnO NPs after annealing at 480 °C for 30 min, respectively. (g-i) Magnified AFM images of (d-f), respectively.



Figure S4. Optical images of (a) (rGONS)0.5, (b) (rGONS)0.3 and (c) (rGONS)0.15, respectively.



**Figure S5.** (a) The I-V plots of (rGONS)<sup>5</sup> and (rGONS)<sup>0.3</sup> mesh devices at drain voltage of 0-5 V. (b) Magnified plot of the black curve shown in (a). (c) Pressure response of (rGONS)<sup>5</sup> mesh device at a pressure of 2400 Pa.

a <sub>pH=0.15</sub>	е рН=0.5	i pH=2	m	pH≡4	q	pH=6	u	pH=8	У	pH=10
<u>20 µm</u>	20 µn	о 20 µm		- 20 µm		20 µm		20 µm		20 µm
b pH=0.15	f pH=0.5	ј pH=2	n	pH=4	r	pH=6	V	pH=8	z	pH=10
and a			-							
200 µm	200 µn	n 200 μm		200 µm		200 µm		200 µm		200 µm
C pH=0.3	9 pH=1	kрН=3	0	pH=5	s	pH=7	w	pH=9		
					-					
20 µm	20 µn	20 µm		20 µm		20 µm		20 µm		
d pH=0.3	h pH=1	I pH=3	р	pH=5	t	pH=7	x	pH=9		
Sector Sector										
200 µm	200 µn	n 200 μm		200 µm		200 µm		200 µm		

**Figure S6.** Optical images of GONSs prepared at pH of 0.15 (a-b), 0.3 (c-d), 0.5 (e-f), 1 (g-h), 2 (i-j), 3 (k-l), 4 (m-n), 5 (o-p), 6 (q-r), 7 (s-t), 8 (u-v), 9 (w-x) and 10 (y-z), respectively.



Figure S7. AFM height images of (a) (GONS)0.3 and (b) (rGONS)0.3, respectively.



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