

## Supporting Information

### **Graphene Nanoparticles-Based Self-Healing Hydrogel in Preventing Post-Operative Recurrence of Breast Cancer**

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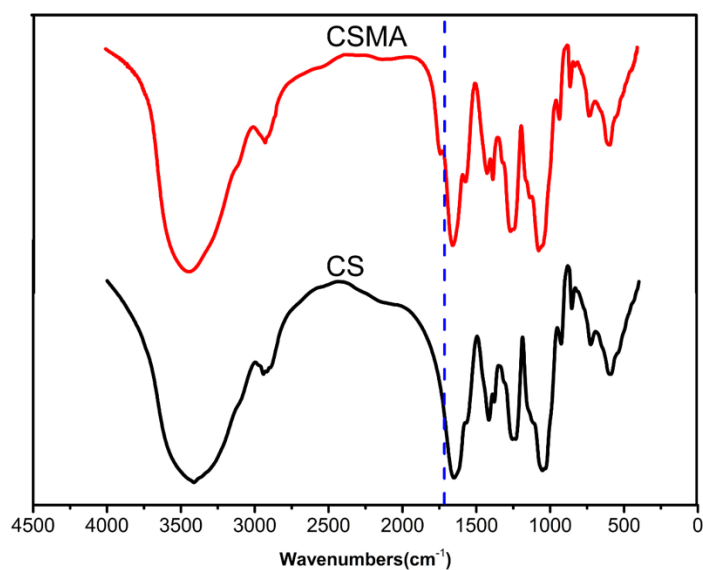
<sup>§</sup>Qiwen Li and Junru Wen contributed equally to this work.

\*Corresponding author:

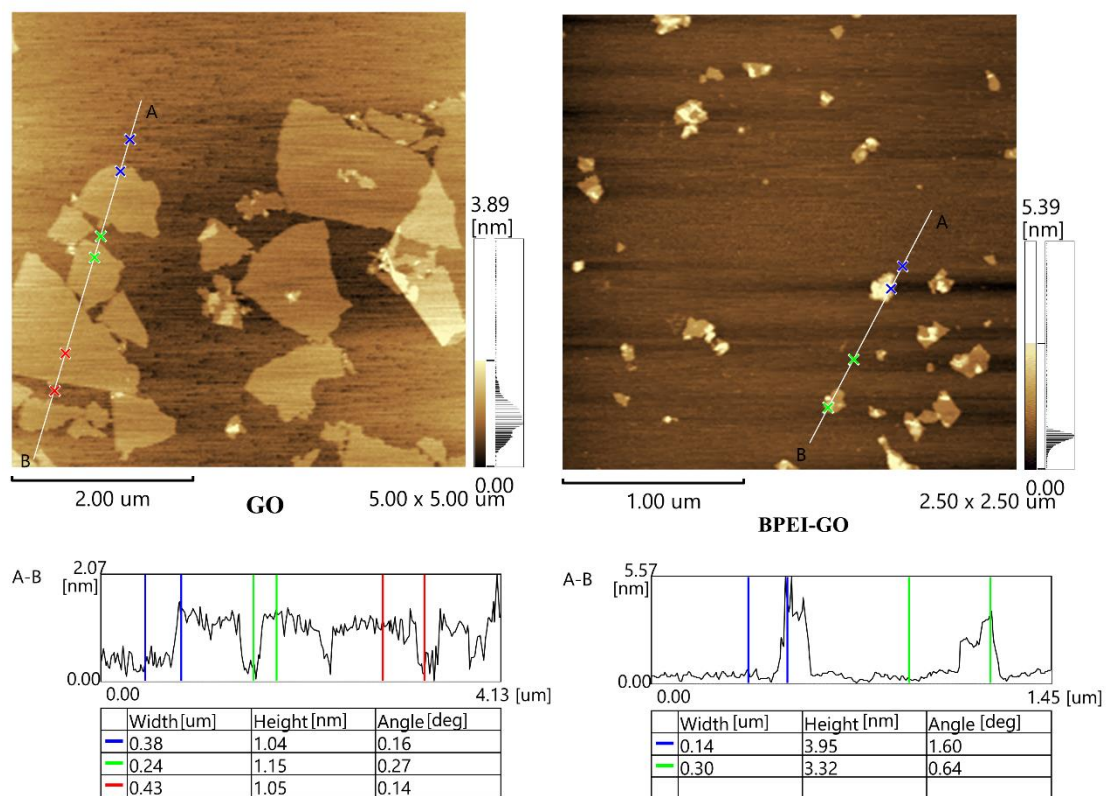
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**Table S1**

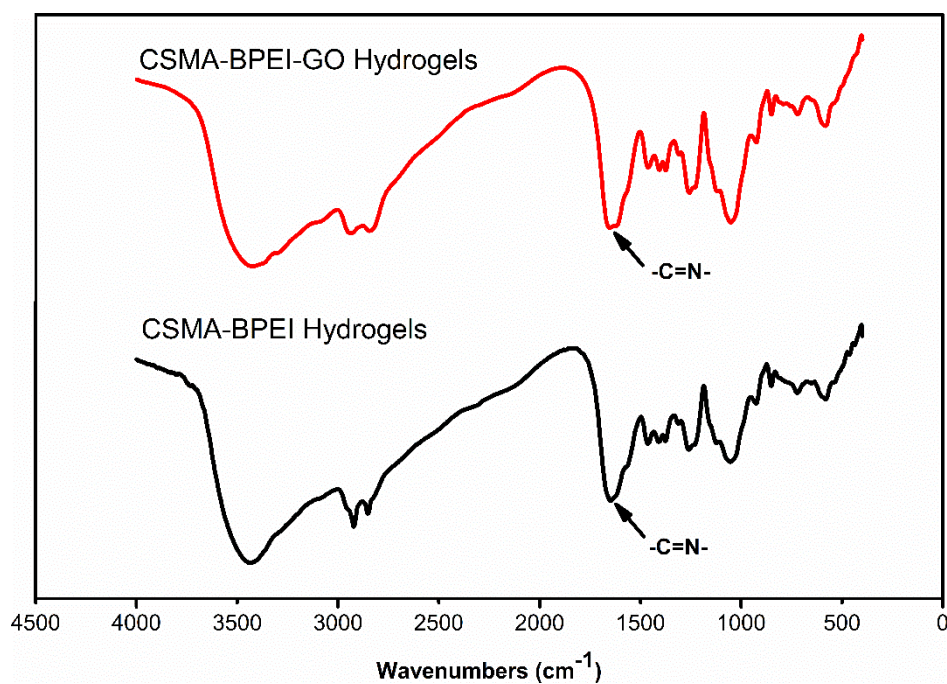
	Volume ( $\mu\text{L}$ )	Concentration (wt%)				
CSMA	300	30				
BPEI	150	10	20	30	40	60
BPEI-GO	50	0.2		0.4		0.6



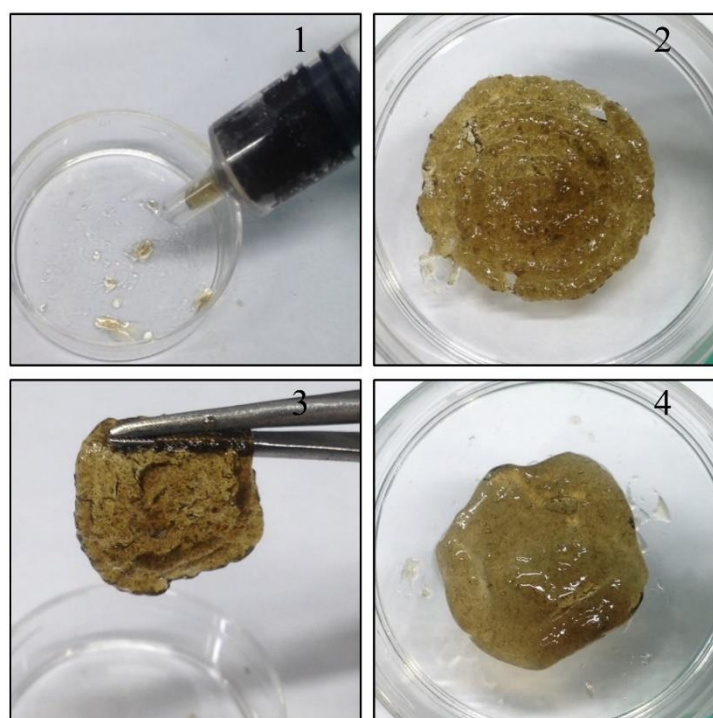
**Figure S1** FT-IR spectra of CS and CSMA. Some characteristic peaks appeared both in CS and CSMA, such as  $\sim 1630\text{ cm}^{-1}$  for amide group,  $\sim 1260\text{ cm}^{-1}$  for S=O bond, etc. Specially, a new peak at  $\sim 1745\text{ cm}^{-1}$  appeared in spectrum of CSMA, demonstrating the aldehyde symmetric vibration.



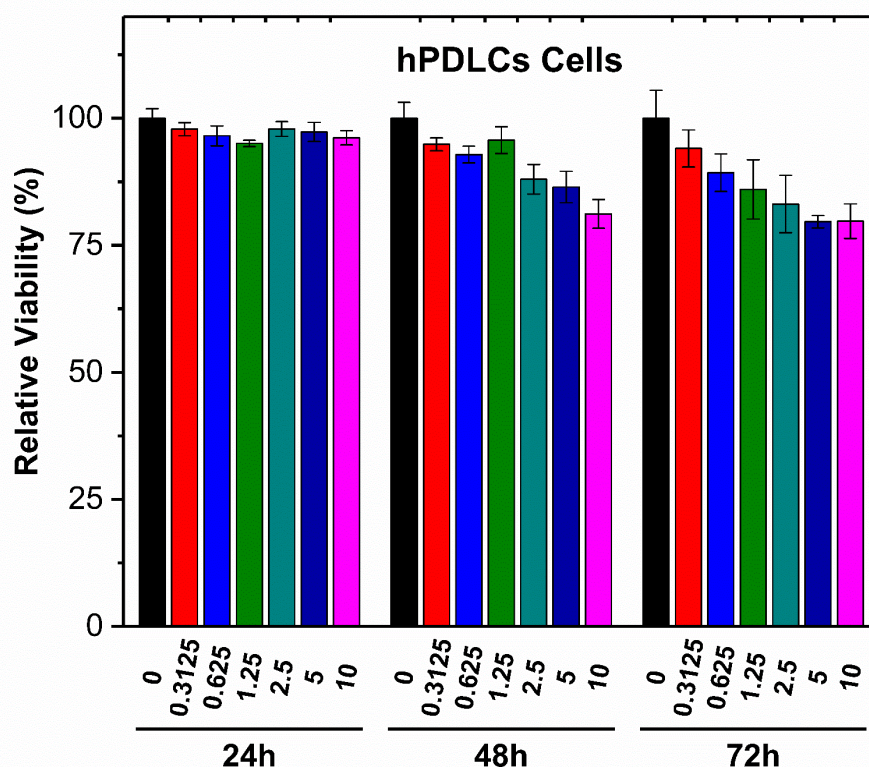
**Figure S2**, thickness of two-dimensional GO and BPEI-GO characterized by AFM.



**Figure S3** FT-IR spectra of CSMA/BPEI hydrogel and CSMA/BPEI/BPEI-GO hydrogel.



**Figure S4**, Self-healing test of CSMA/BPEI/BPEI-GO hydrogels.



**Figure S5** Cytotoxicity of CSMA/BPEI/BPEI-GO hydrogel leachates at different concentrations (mg/mL) on hPDLCs cells.