Supporting Information

Concentrated Solar Induced Graphene

Xiao-Hua Hu,[†] Rui Zhang,[†] Zhiyong Wu, Shisheng Xiong[*]

School of Information Science and Technology, Fudan University, 220 Handan Road, Shanghai 200433, China

[†]**Co-first Authors**

Xiao-Hua Hu and Rui Zhang contributed equally to this work.

[*]**Corresponding Author**

Shisheng Xiong

E-mail: sxiong@fudan.edu.cn

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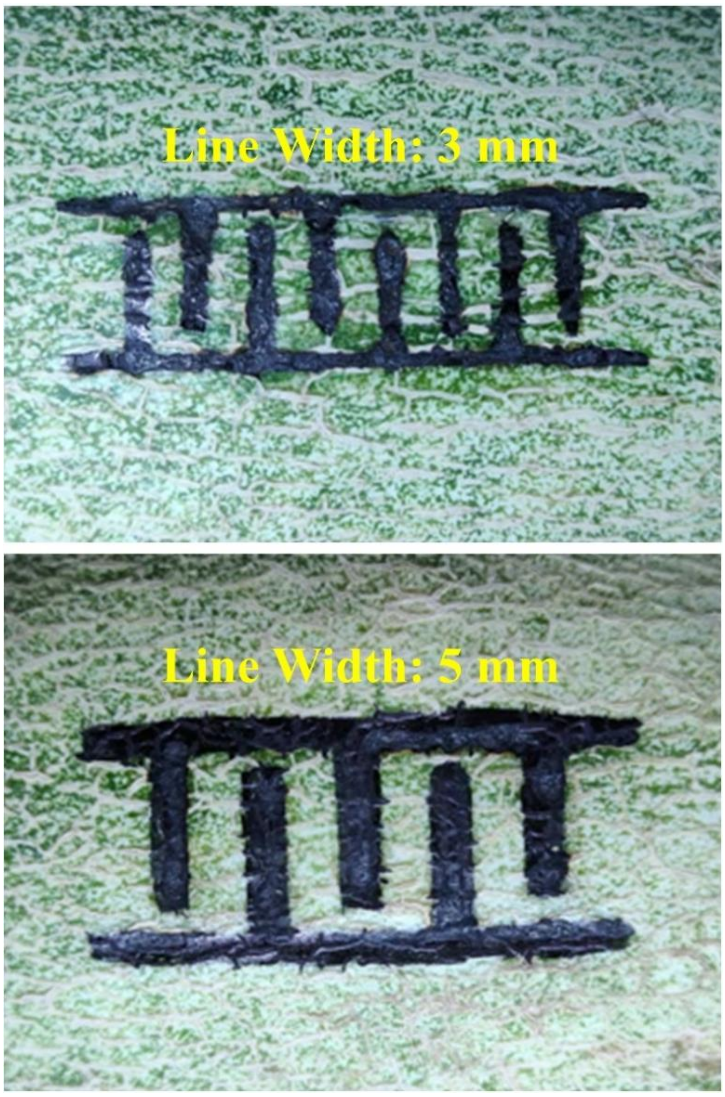

Figure S1. Photograph of graphene patterned into a shape of the interdigital electrodes on cantaloupe peels by using concentrated solar radiation. Top: 8 interdigital electrodes with a line width of ~3 mm. Down: 5 interdigital electrodes with a line width of ~5 mm.

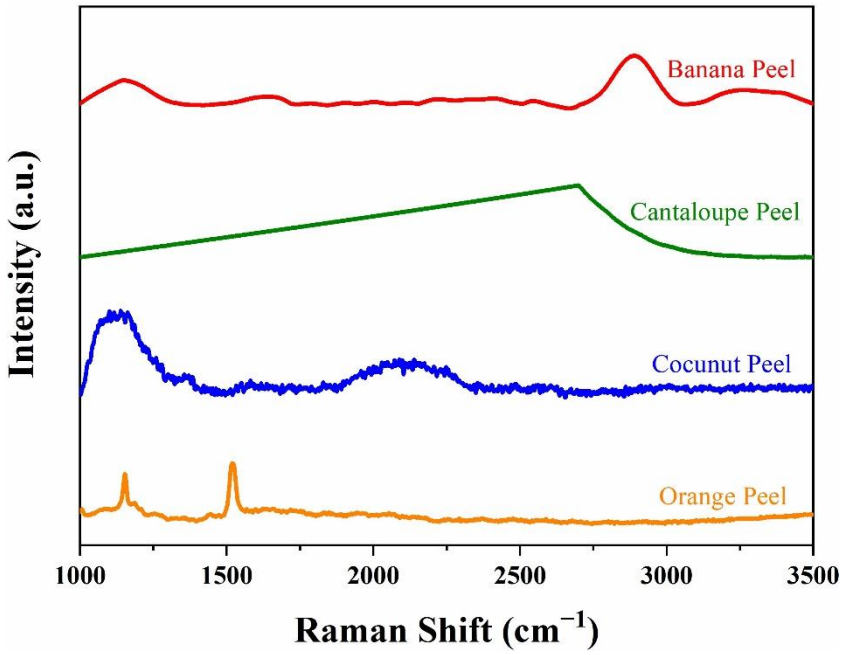

Figure S2. Raman spectra of four different carbon sources: banana peel, cantaloupe peel, coconut peel, and orange peel.

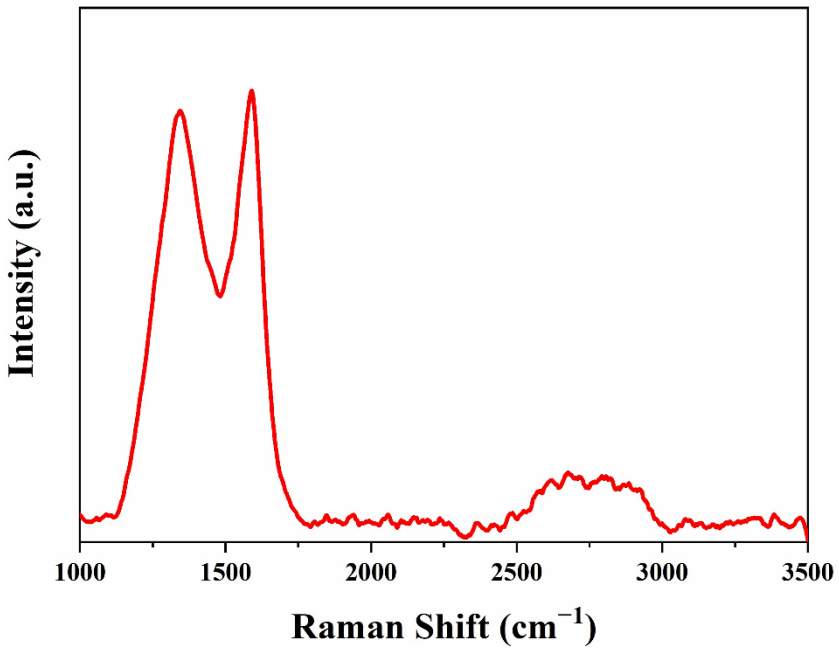

Figure S3. Raman spectrum of CSIG from PI film.

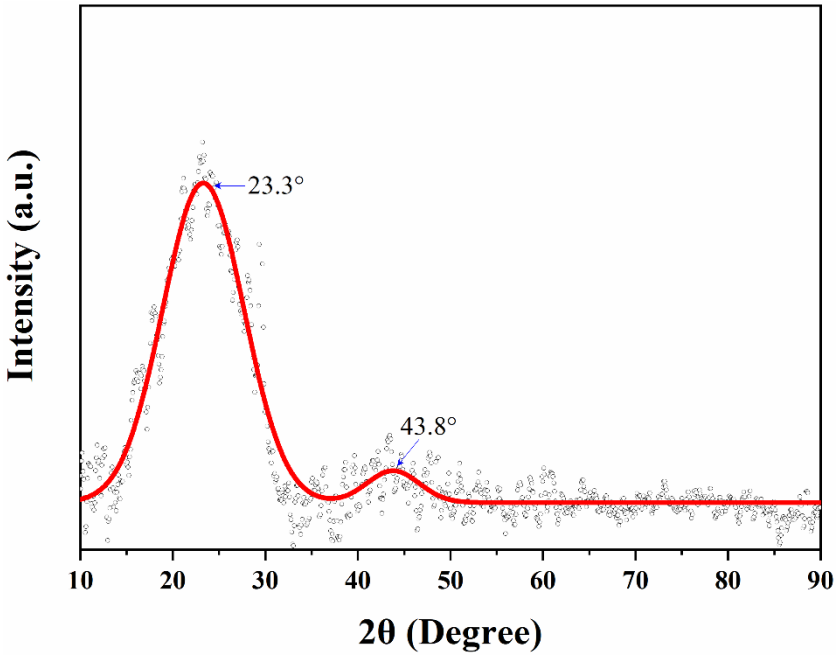

Figure S4. XRD pattern of CSIG from banana peels.

Table S1. Gauss fitting parameter of two peaks in XRD pattern (**Figure S4**) of CSIG.

Model	**Gauss**	
Equation	$y = y_0+(A/(w\times\text{sqrt}(\text{Pi}/2)))\times\exp(-2\times((x-x_c)/w)^2)$	
Parameters	**Peak I**	**Peak II**
x_c	23.30 ± 0.05	43.81 ± 0.42
A	1969.54 ± 24.42	125.84 ± 18.37
y_0	1.37 ± 0.60	1.37 ± 0.60
w	8.77 ± 0.11	5.63 ± 0.87
Height	179.15 ± 1.88	17.82 ± 2.32
Full Width at Half Maximum	10.33 ± 0.131	6.63 ± 1.03
Sigma	4.39 ± 0.06	2.82 ± 0.44

Notice: x_c is the center of the peak. A is the area under the peak. y_0 is the baseline offset. w equals 2 times the standard deviation of the Gaussian distribution (2×s) or approximately 0.849 the width of the peak at half height. Pi is the ratio of circumference to diameter, i.e., 3.141592654.

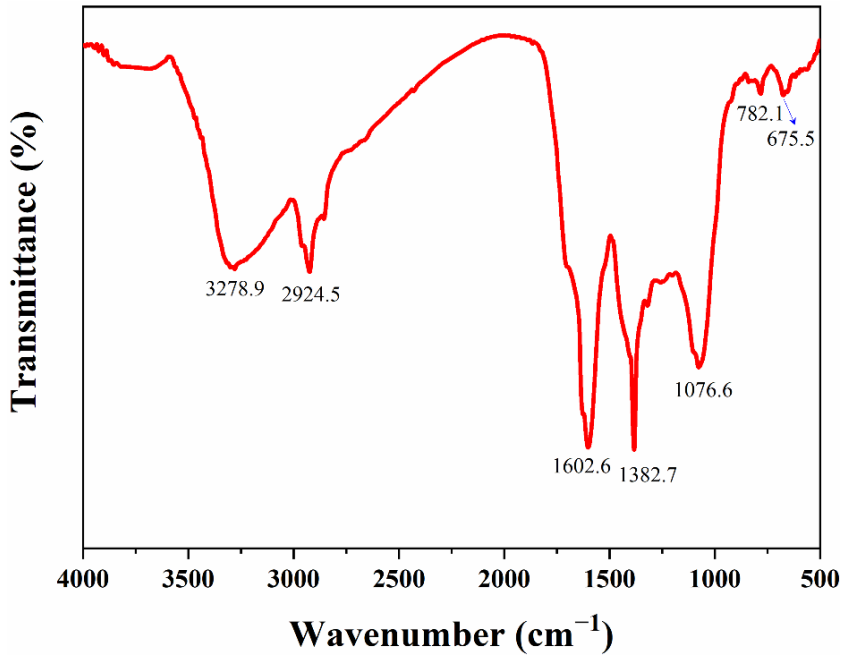

Figure S5. FT-IR spectrum of CSIG from banana peels.

Table S2. Assignment of the bands observed in FT-IR spectrum (**Figure S5**) of CSIG.

Wavenumber (cm^{-1})	Vibrational Mode	Transmittance
~3278.9	O−H stretching[1]	68.9%
~2924.5	C−H stretching[2]	68.6%
~1602.6	C=C stretching[2]	50.4%
~1382.7	C−H bending[3]	50.2%
~1076.6	C−O stretching[3]	58.7%
~782.1	out-of-plane C−H ring bending[4]	87.1%
~675.5	ν_{11} mode of benzene[4,5]	86.8%

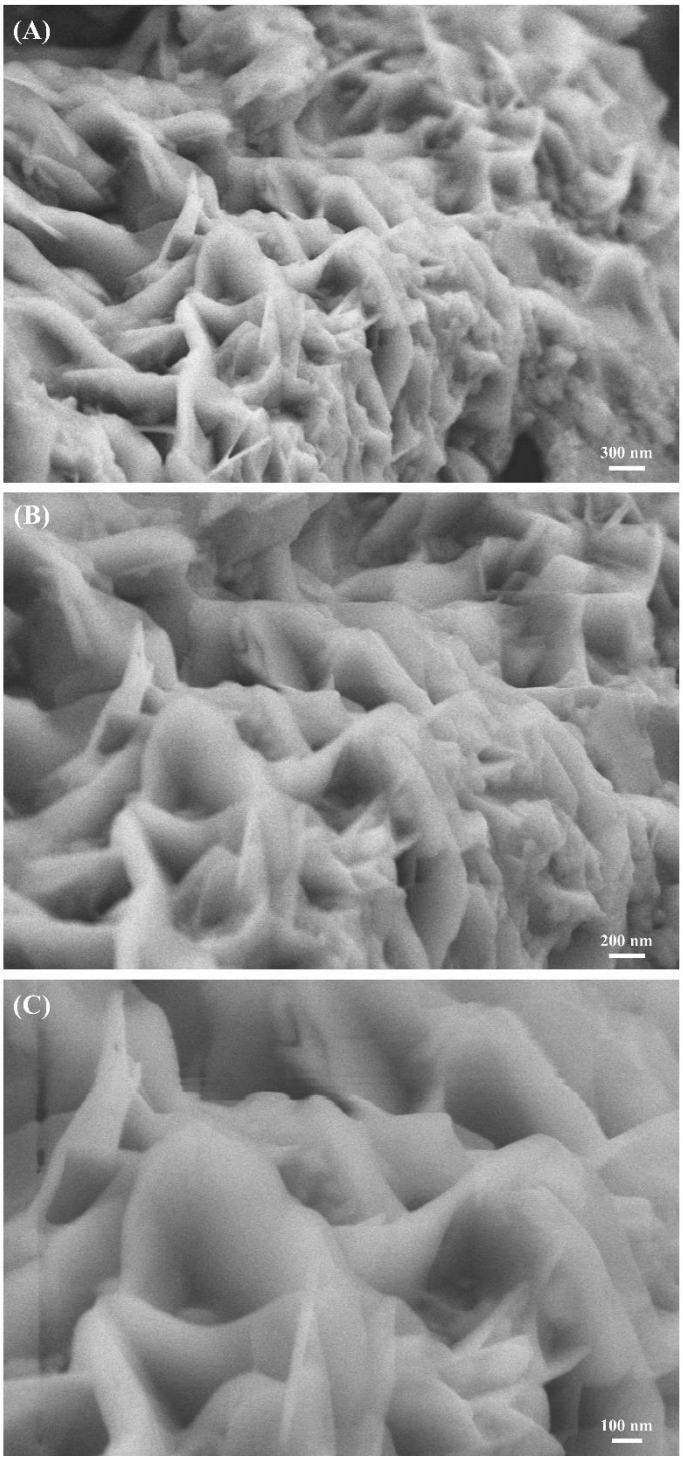

Figure S6. SEM images of CSIG from banana peels at (A) 20 k, (B) 30 k, and (C) 50 k magnifications.

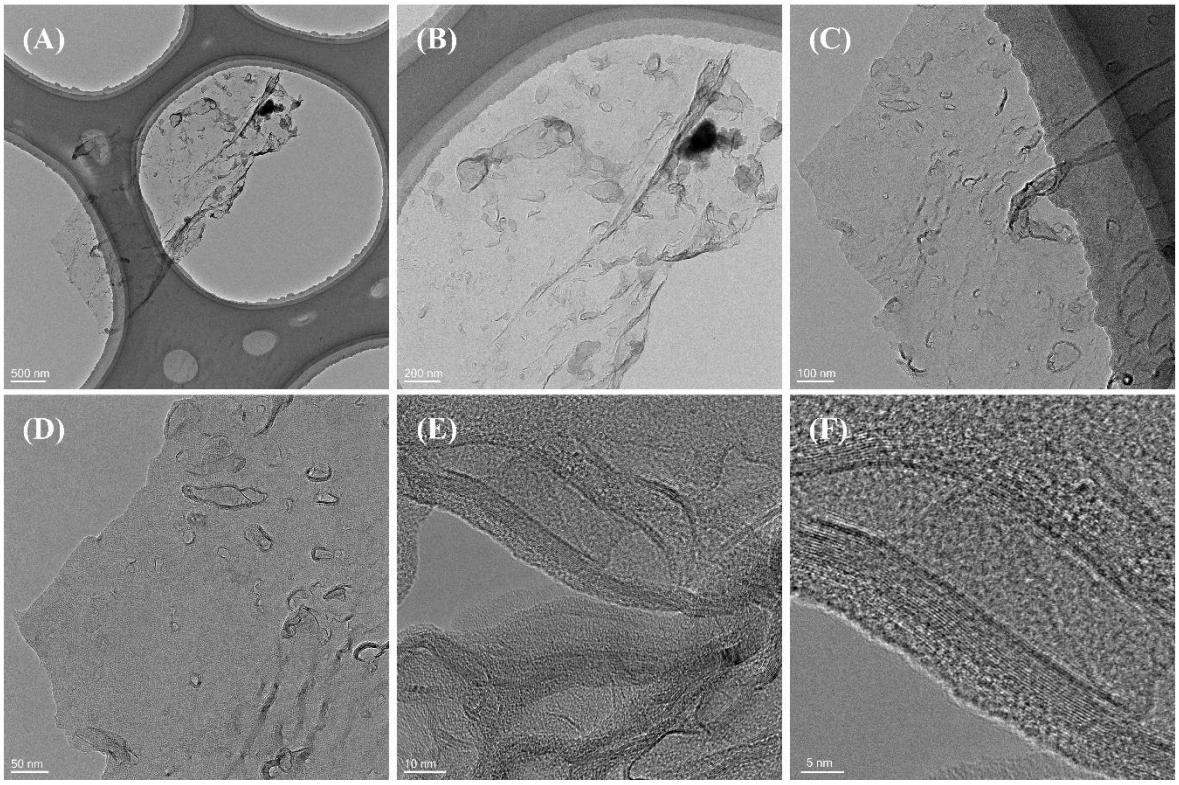

Figure S7. TEM images of CSIG from banana peels at (A) 10 k, (B) 25 k, (C) 50 k, (D) 100 k, (E) 500 k, and (F) 1000 k magnifications.

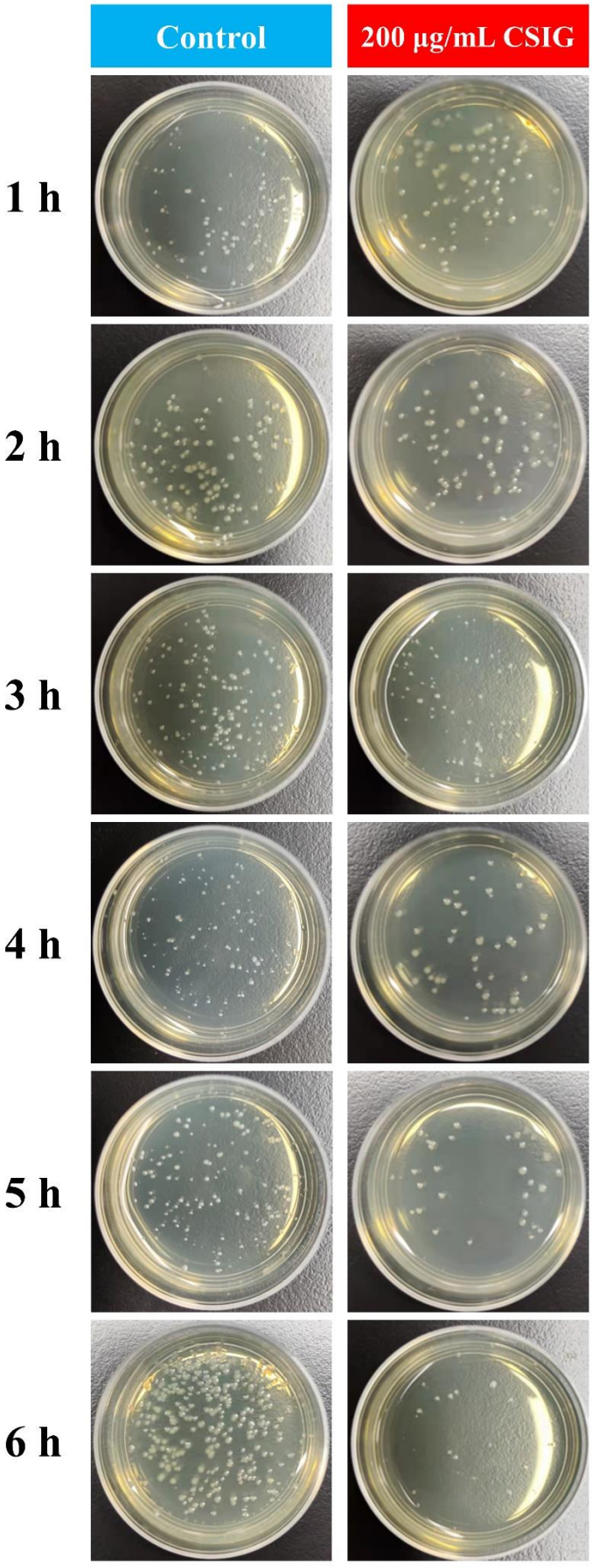

Figure S8. Photographs showing the bacterial culture plates of *E. coli* incubated without CSIG, and with 200 µg/mL CSIG exposure for 1, 2, 3, 4, 5, and 6 h.

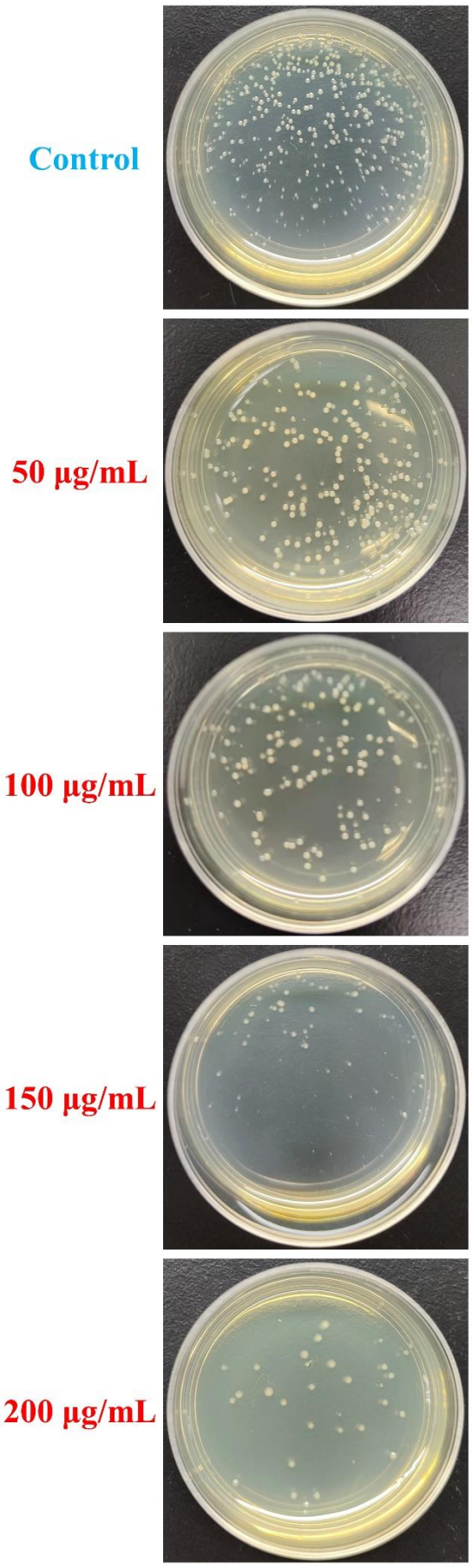

Figure S9. Photographs showing the bacterial culture plates of *E. coli* upon a 6 h exposure to the control (without CSIG) and four different concentrations of CSIG dispersion.

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