Supporting Information

Cross-Linking Graphene Oxide-Polyethyleneimine Hybrid Film containing Ciprofloxacin: One-Step Preparation, Controlled Drug Release and Antibacterial Performance

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Bacteria Viability Test of E. coli with oscillation suspensions of the GO and GPH films

E. coli were inoculated in oscillation suspensions of the GO film and GPH film with a final cell concentration of ~10^7/ml. The mixture was incubated at 200 rpm for 2 h at 37 °C. Then, a portion of this bacterium suspension was diluted to a concentration of ~10^5 cells/ml using a gradient method and then applied uniformly on three LB agar medium plates per gradient solution (with a bare PBS buffer as the control). These sheets were incubated at 37 °C for 24 h. The colony-forming units (CFU) were counted, and the percentage of activated cells was determined from the ratio of the number of cells in the mixture divided by the number of cells cultivated with bare PBS buffer, as shown in Figure S1.

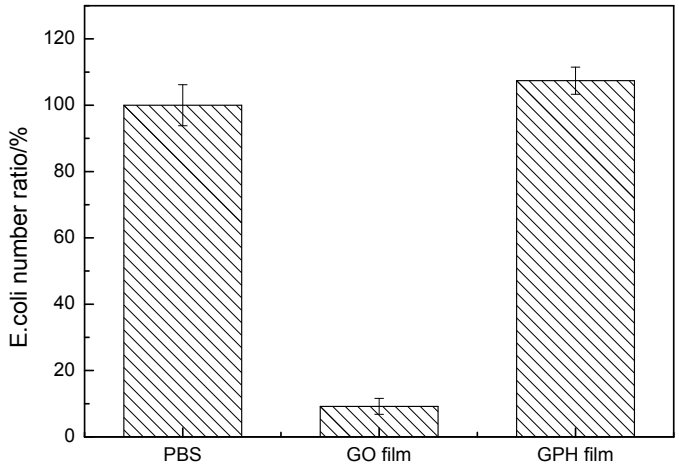

Figure S1. Percentage of activated cells with oscillation suspensions of GO film and GPH film

CF loading capacity of CPH film

After filtration, the filtrate was collected and the CF concentration was measured with a UV−visible spectrophotometer Gold Spectrumlab 54 (Shanghai the Lengguang Technology Co. Ltd., China) at the wavelength of 267 nm using a standard CF calibration curve (Figure S2) generated from a series of CF solutions with determined concentrations. The CF loading capacity (DL) of the film was calculated to be according to Equation S1 as followed:

$$DL(mg/mg) = \frac{M_{CF} - M_{CF}^{'}}{M_{GPH\ film}} \quad \text{(S1)}$$

where M_{CF} is the initial amount of CF added, M_{CF}' is the total amount of CF in the filtrate after loading, and $M_{GPH\ film}$ is the weight of GPH film, which can be calculated from the XPS result (Table S2). As the percentage of nitrogen of GPH film was about 11.85 wt%, the fraction of PEI

in GPH film was calculated to be 35.6 wt%. The CF loading capacity of GPH film is as high as 1.71 mg/mg^{-1} with the initial CF concentration of 1 mg/ml. This result indicated the excellent drug-loading capability of GPH film.

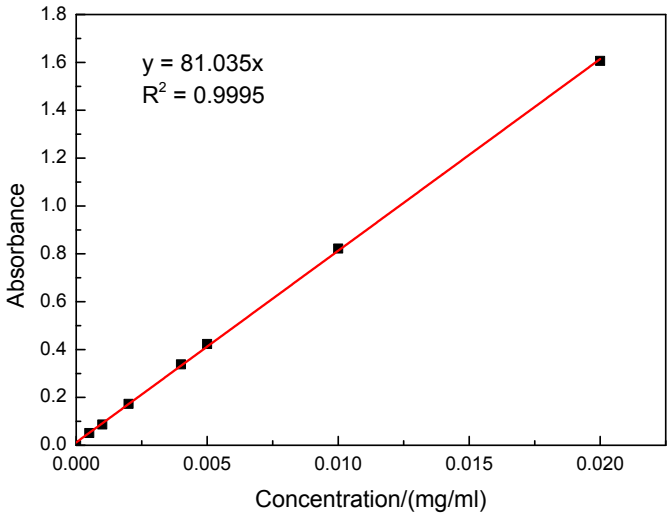

Figure S2. Calibration curve of CF.

Table S1. Relative atomic mass concentrations in the GO film and GPH film

	C [%]	O [%]	N [%]
GO film	64.46	35.54	-
GPH film	62.17	25.48	11.85

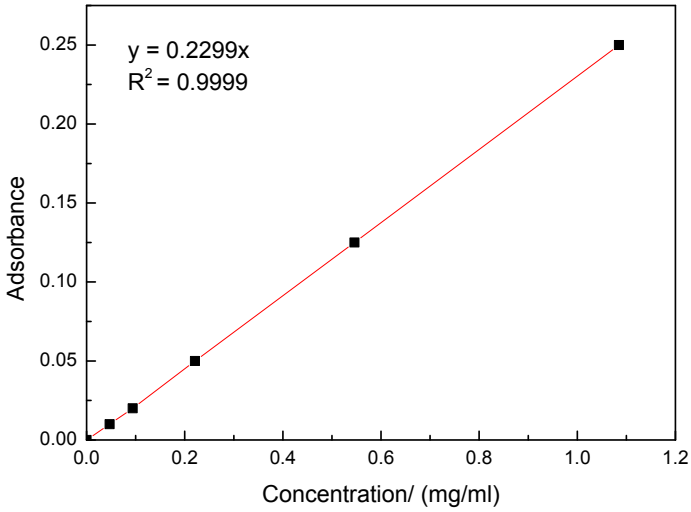

Figure S3. Calibration curve of GO nanosheets.