

Support Information

Additional characterization data of GO@PEG@AgNP composites, including size distributions and zeta potential of AgNPs formed on GO@PEG sheets, XRD, and UV-vis absorption of GO@PEG, GO@AgNPs, GO@PEG@AgNPs composites. Effect of concentrations antibacterial activity of four types GO@PEG@AgNPs represented by OD600.

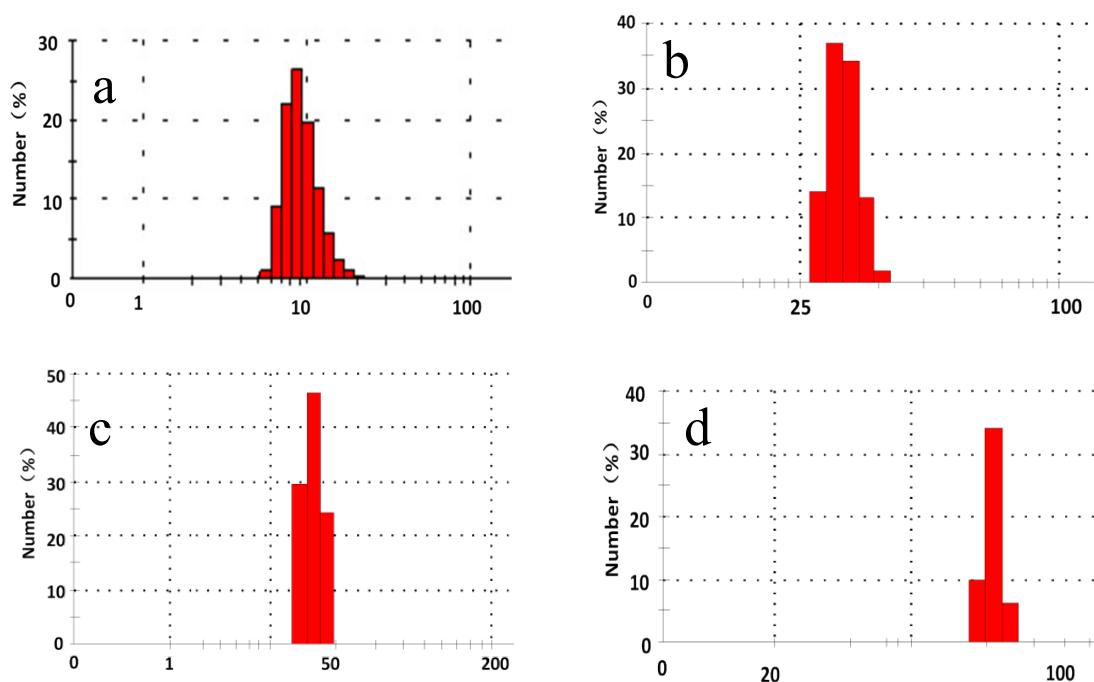


Fig S1. The size distributions of four types GO@PEG@AgPNs composites, (a) is GO@PEG@AgNPs (10 nm), (b) is GO@PEG@AgNPs (30 nm), (c) is GO@PEG@AgNPs (50 nm), (d) is GO@PEG@AgNPs (80 nm).

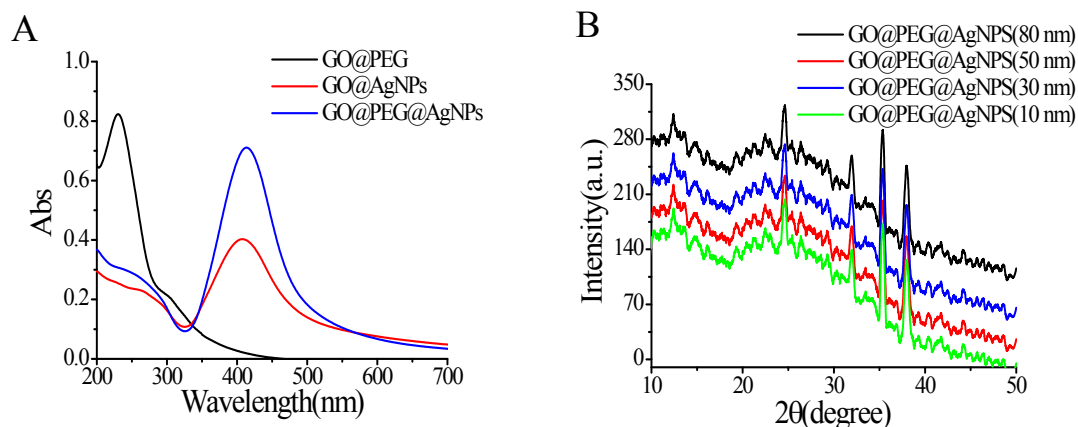


Fig S2. (A) UV-vis absorption spectra of GO@PEG, GO@AgNPs, GO@PEG@AgNPs composites. (B) XRD spectra of four types GO@PEG@AgNPs composites.

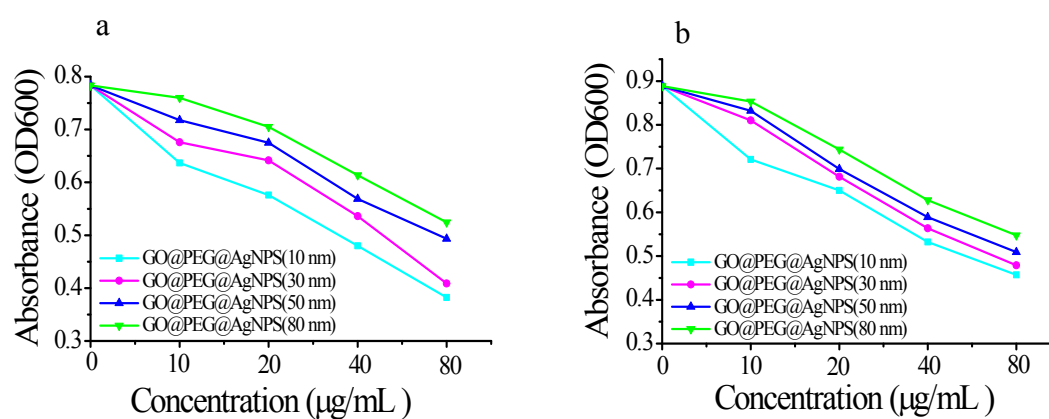


Fig S3. Effect of concentrations antibacterial activity of four types GO@PEG@AgNPs represented by OD600 for *E. coli* (a) and *S. aureus* (b).

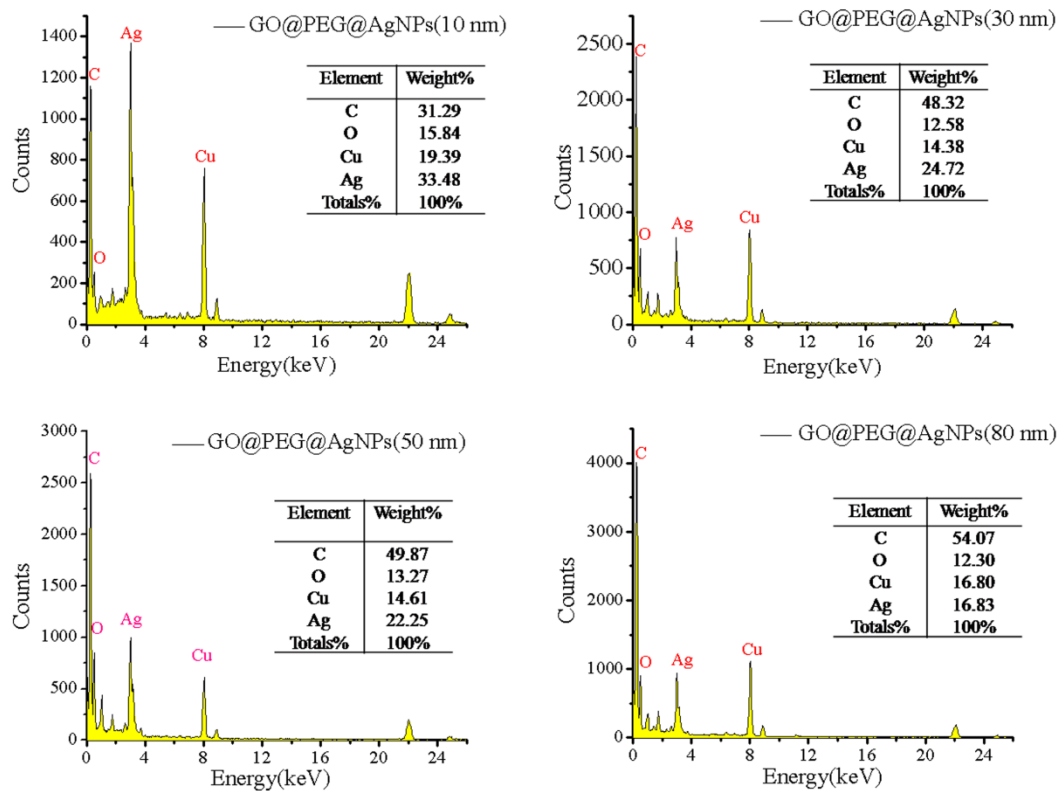


Fig S4. The Dispersive X-ray spectroscopy (EDX) of GO@PEG@AgNPs composites.

Table 1 The silver-nanoparticles' size of GO@PEG@AgNPs, GO@PEG and zeta potential of composites

Formulation	Size (nm)	Zeta potential (mV)
PEG		11.6±2
GO@PEG	500±300	-12.4±0.37
GO@PEG@AgNPs (10 nm)	10±3	-22.4±0.25
GO@PEG@AgNPs (30 nm)	30±2	-30.1±0.45
GO@PEG@AgNPs (50 nm)	50±3	-43.2±0.55
GO@PEG@AgNPs (80 nm)	80±2	-50.1±0.15

Table 2 The MIC value of four types GO@PEG@AgNPs

MIC value (µg/ml)

Bacterial	GO@PEG@AgNPs (10 nm)	GO@PEG@AgNPs (30 nm)	GO@PEG@AgNPs (50 nm)	GO@PEG@AgNPs (80 nm)	AgNPs
E.coli	3	6	8.5	13	24
S.aureus	4	8	12	15	35