Supporting Information for

## Rapid Antibacterial Effect of Sunlight-Exposed Silicon Nanowire Arrays Modified with Au/Ag Alloy Nanoparticles

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Figure S1. SEM images of SN-Ag (a) and SN-Au (b).



Figure S2. Visible spectra of SN-Au/Ag, and mixture of SN-Au and SN-Ag.



Figure S3. (a) Au 4f XPS of Au, (b) Ag 3d XPS of Ag.



Figure S4. The adsorption of *E. coli* on different nanomaterials.



Figure S5. Fluorescent images of E. coli different nanomaterials.



Figure S6. Colony formation (agar plate) in *E. coli* treated with different concentration of  $H_2O_2$ .



Figure S7. Antibacterial effect of SN and SN-Au/Ag under sunlight for different time.



**Figure S8.** Antibacterial effect of SN, SN-Ag, SN-Au and SN-Au/Ag on the growth of *S. aureus* after light treatment. (a) Colony formation of light treated *S. aureus* by different nanomaterials on agar plate; (b) Bacterial killing efficiency of SN, SN-Ag, SN-Au and SN-Au/Ag. The results were expressed as the mean ±SD, n=3 (\* p<0.05, \*\*\* p<0.001, SN was the control group for analysis of significant differences).



Figure S9. SEM image of the non-irradiated bacteria.



**Figure S10.** Live–dead cell staining images of L929 cells after incubation with the materials for 12 h or 24 h.