Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.


# Supporting Information

## Capture and Elimination *Staphylococcus aureus* based on Langmuir-Blodgett $MnO_2$ Nanowire Monolayer promote infected wound healing

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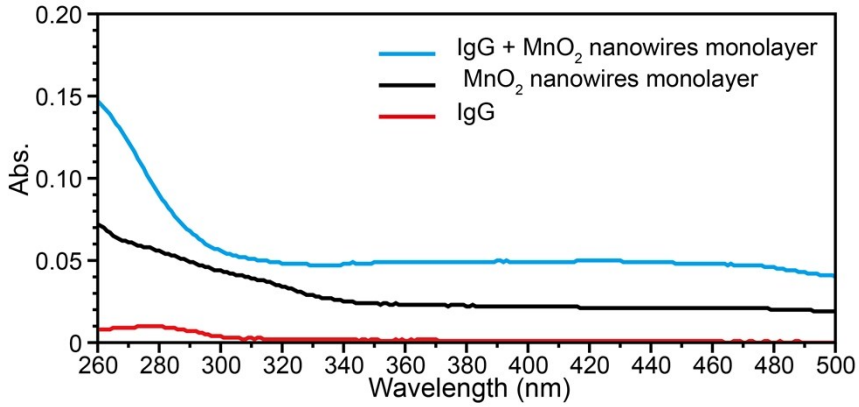


**Figure S1.** The UV-vis spectra of pure IgG, manganese dioxide nanowires monolayer and IgG modified manganese dioxide nanowires monolayer.

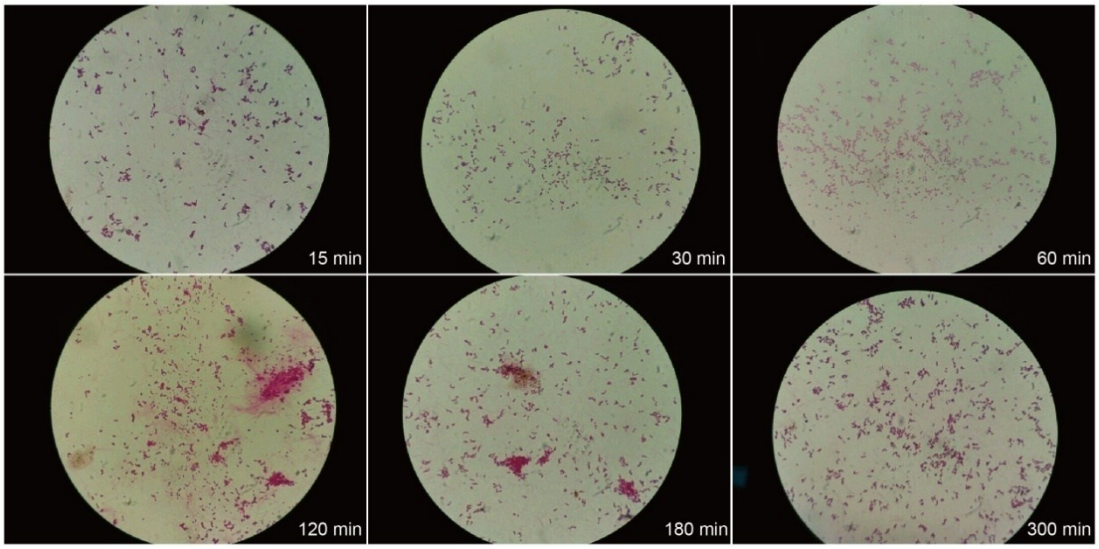


**Figure S2.** Typical optical microscopy images of the Gram stained bacteria captured by $MnO_2$ substrate.

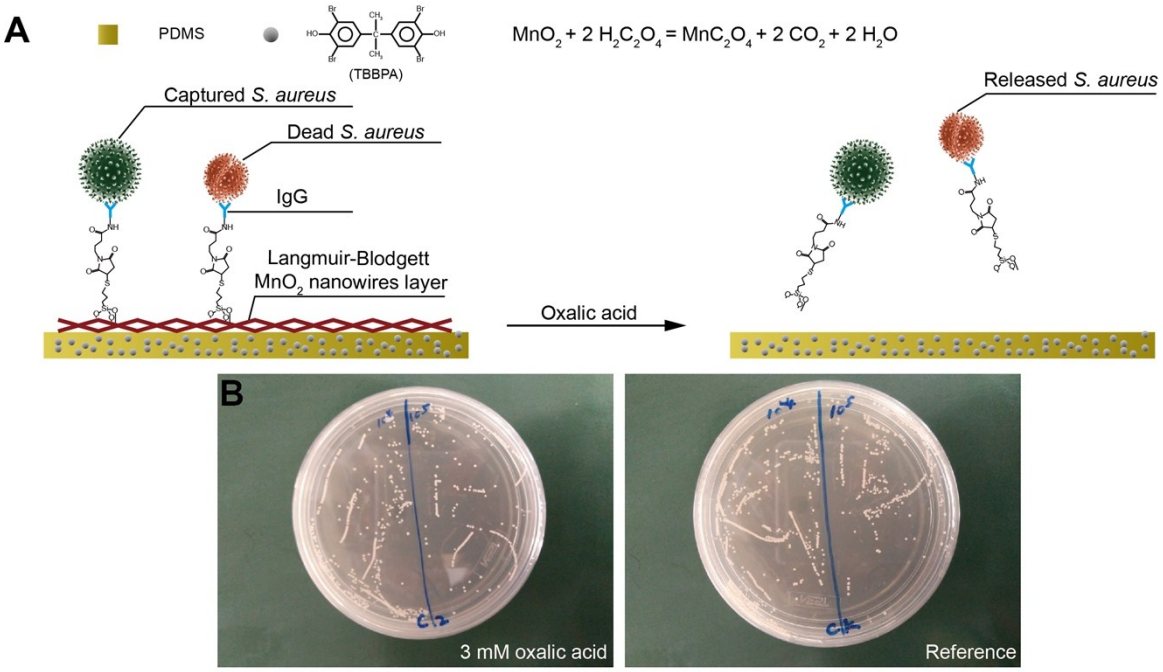


**Figure S3.** (**A**) Schematic design of $MnO_2$-sacrificed methodto break the interaction between the immobilized bacteria and $MnO_2$ nanowires monolayer. (**B**) The corresponding bacteria plate counting results for correlation between concentration of oxalic acid and bacteria viability.

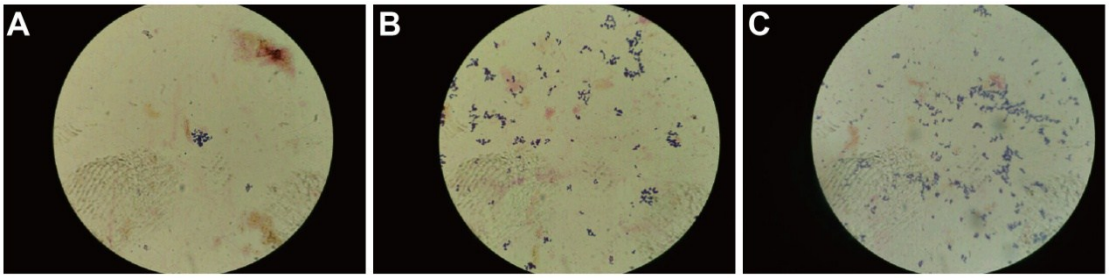


**Figure S4.** (**A**) The corresponding optical microscopy image of bacteria captured at concentration of 100 $mL^{-1}$ (bacteria number per mL). (**B**) The corresponding optical microscopy image of bacteria captured at concentration of 1000 $mL^{-1}$ (bacteria number per mL). (**C**) The corresponding optical microscopy image of bacteria captured at concentration of 100 $mL^{-1}$ (bacteria number per mL).

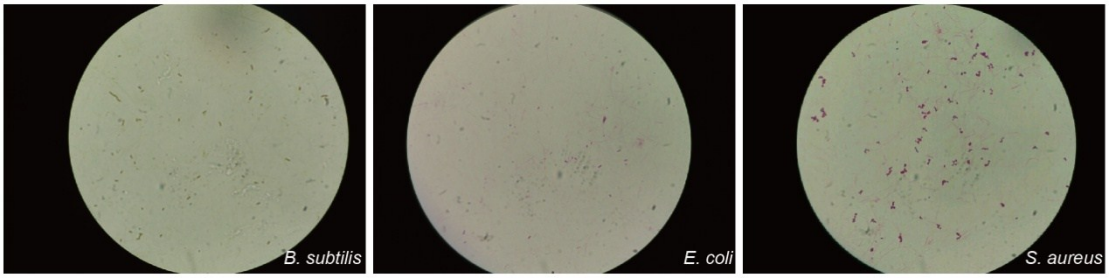


**Figure S5.** The corresponding optical images of selectivity for bacteria including *B. subtilis*, *E. coli*, and *S. aureus*.

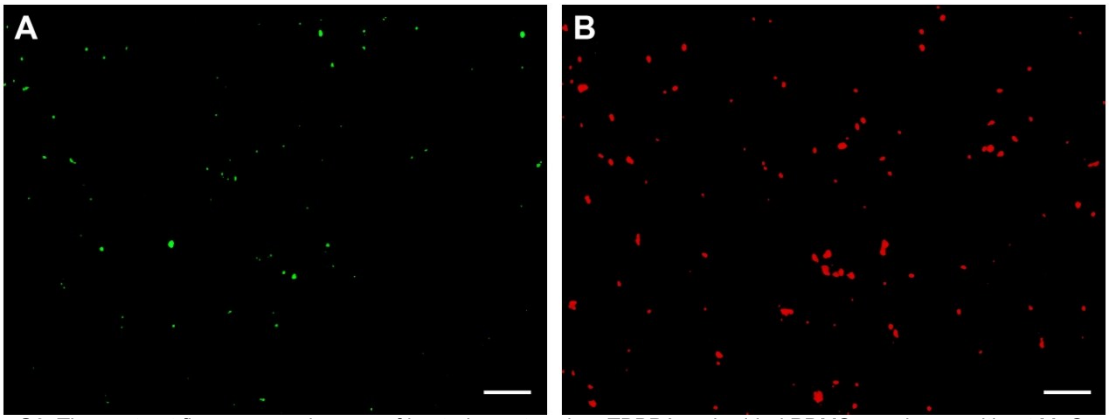


**Figure S6.** The contrast fluorescence images of bacteria captured on TBBPA embedded PDMS membrane without $MnO_2$ nanowire monolayer and corresponding IgG surface modification(Green: total bacteria, Red: dead bacteria).

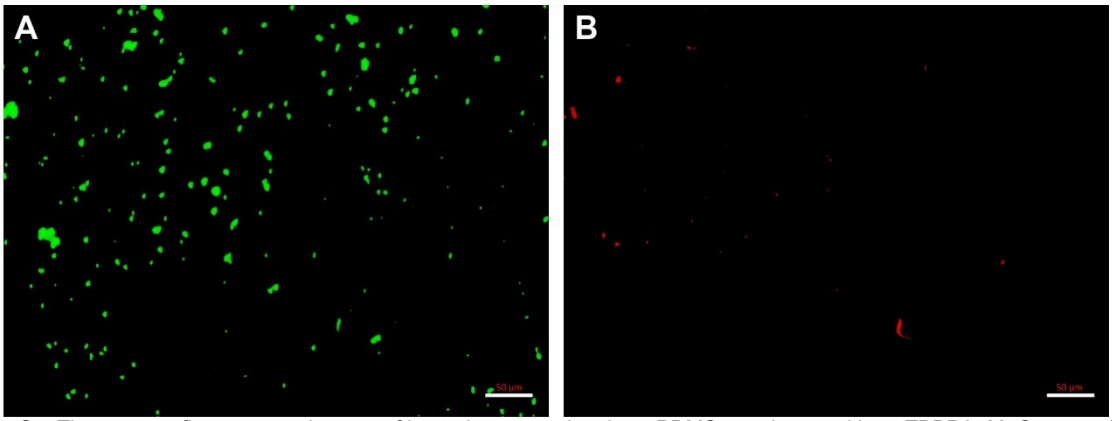


**Figure S7.** The contrast fluorescence images of bacteria captured on bare PDMS membrane without TBBPA, $MnO_2$ nanowire monolayer and corresponding IgG surface modification(Green: total bacteria, Red: dead bacteria).

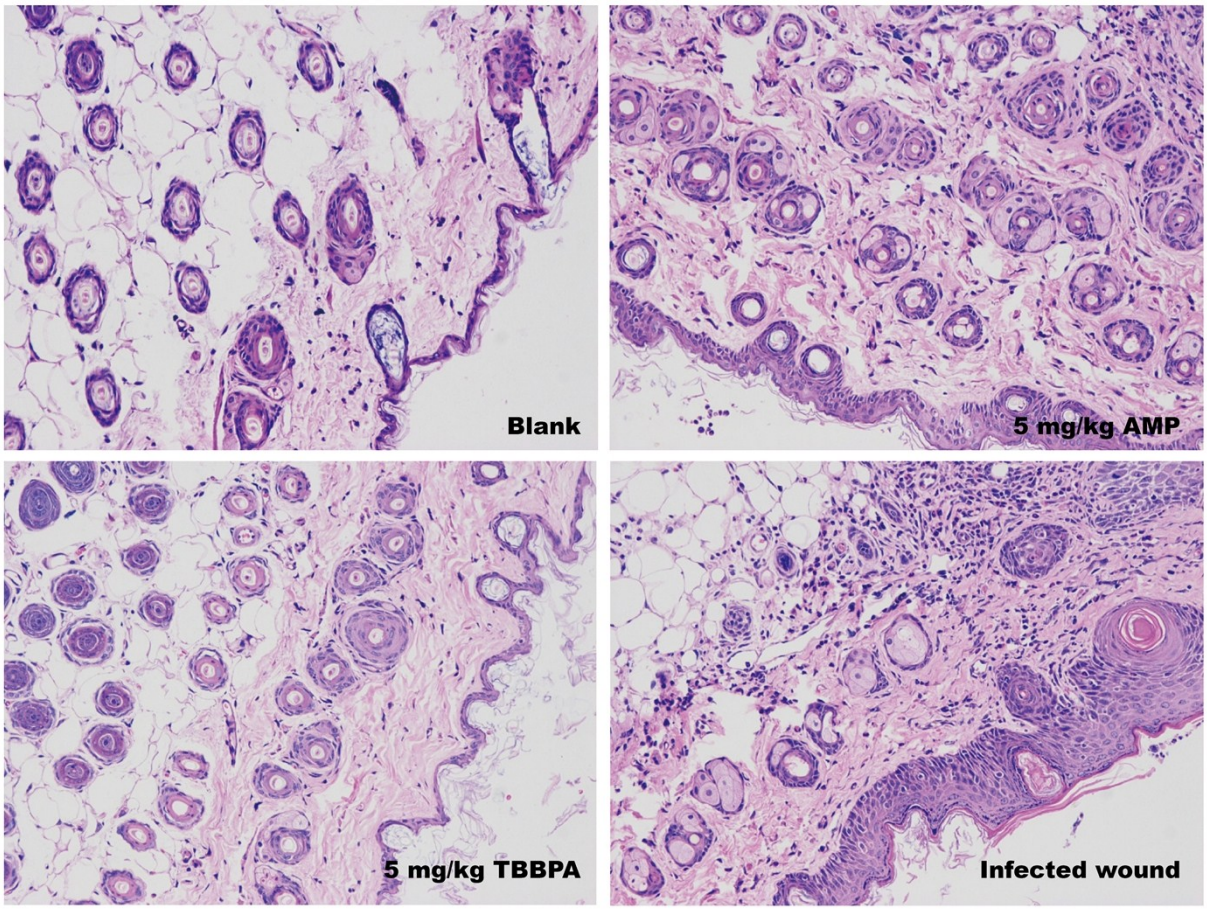


**Figure S8.** Histopathological examination of mouse wound surface, Hematoxylin-eosin staining, x200 magnification.