SUPPORTING INFORMATION

Beyond the fluorescence labelling of novel nitrogen-doped silicon quantum dot: reducing agent and stabilizer for preparing hybrid nanoparticles and antibacterial applications

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Summary

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Fig. S7 Scavenging activity of N-SiQDs to DPPH radicals.

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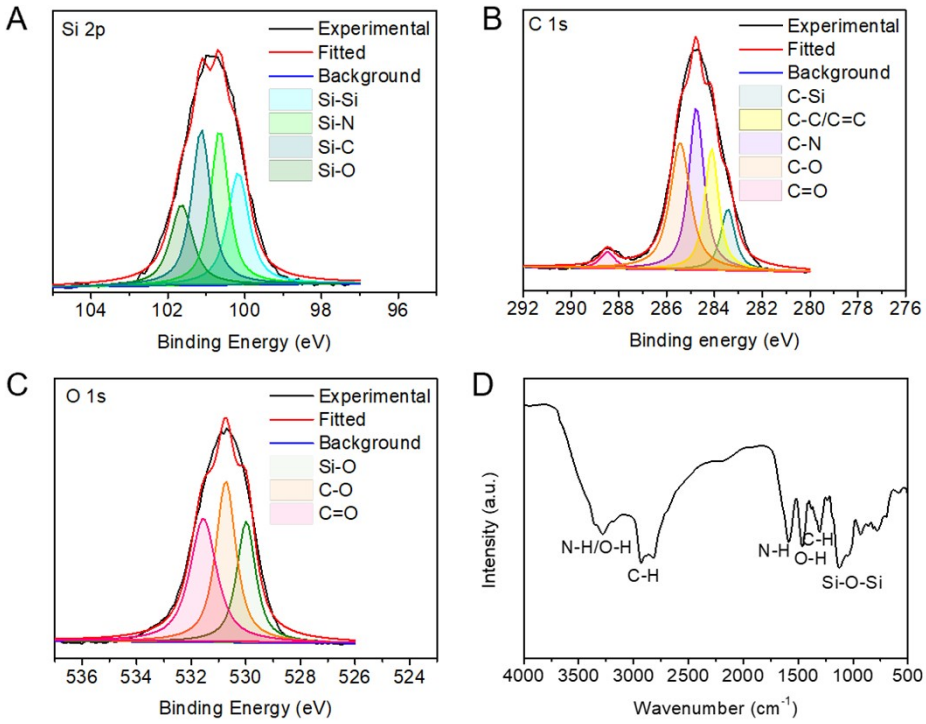

Fig. S1 The Si 2p (A), C 1s (B) and O 1s (C) XPS spectrum, and FT-IR spectrum (D) of N-SiQDs.

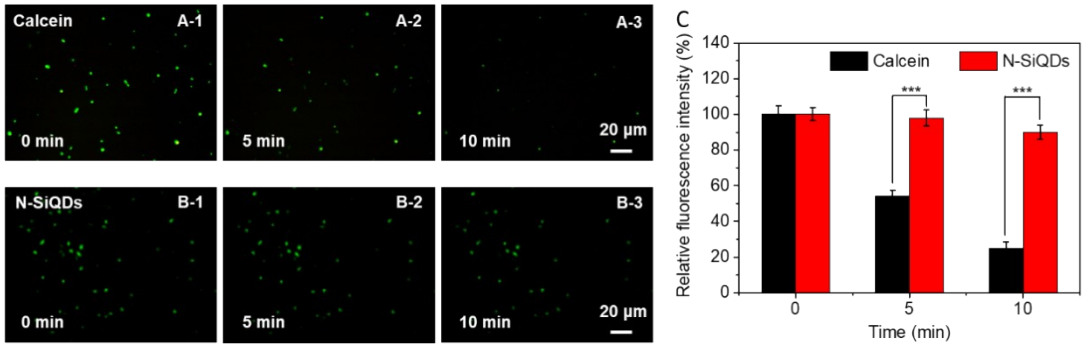

Fig. S2 The photobleaching resistance of calcein (A) and N-SiQDs (B) labeled bacteria. (C) The fluorescence quantitative results under different conditions. ***$p < 0.005$.

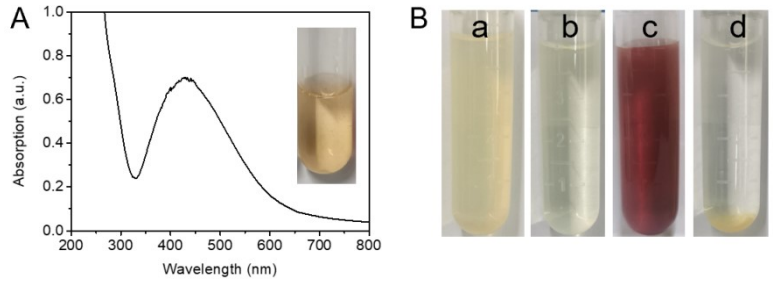

Fig. S3 (A) The UV spectrum and photograph (insert) of N-SiQDs mixed with $AgNO_3$. (B) Photographs of TEPA-CDs (a), APTMS-SiQDs (b), N-SiQDs (c) and TEPA-CDs/APTMS-SiQDs (v/v=1:1) (d) mixed with $HAuCl_4$, respectively.

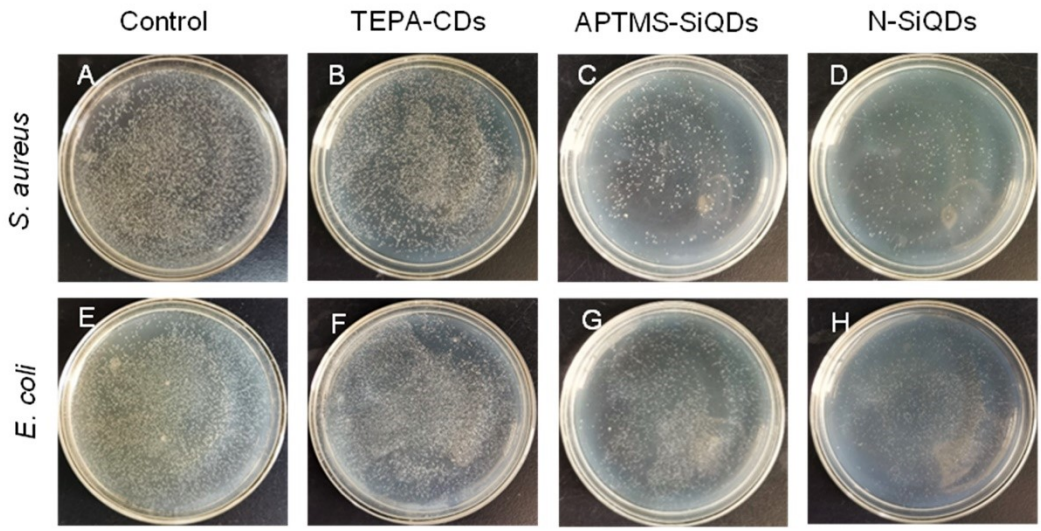

Fig. S4 Photographs of bacterial colonies of *S. aureus* (A-D) and *E. coli* (E-H) cells with different treatments, respectively. (A and E: normal saline, B and F: TEPA-CDs, C and G: APTMS-SiQDs , D and H: N-SiQDs, the material dosage was 0.64 mg/mL and 0.07 mg/mL for *S. aureus* and *E. coli*, respectively)

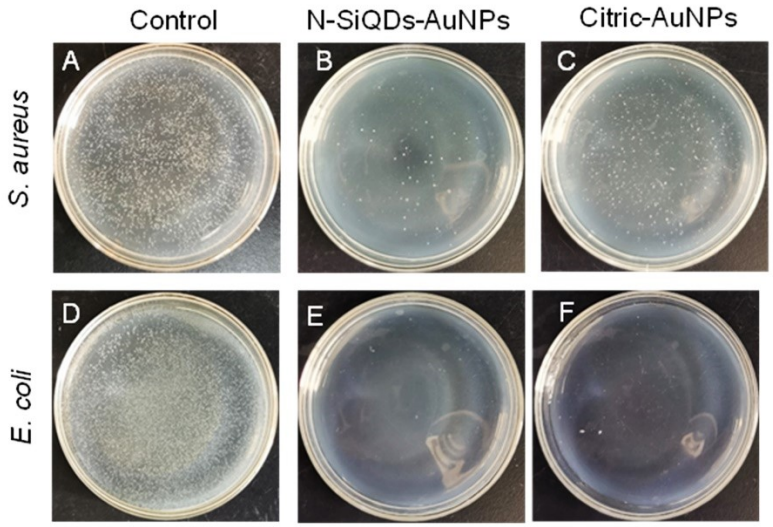

Fig. S5 Photographs of bacterial colonies of *S. aureus* (A-C) and *E. coli* (D-F) cells with different treatments, respectively. (a and d: normal saline + 10 mM H_2O_2, b and e: 2 mg/mL N-SiQDs-AuNPs + 10 mM H_2O_2, c and f: 2 mg/mL citric-AuNPs + 10 mM H_2O_2)

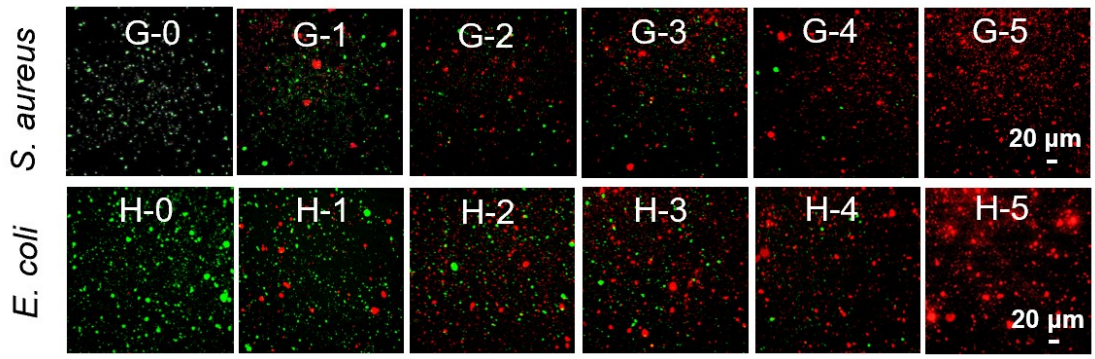

Fig. S6 Fluorescence images of live (green)/dead (red) of *S. aureus* and *E. coli* corresponding to the Fig.5 G and H.

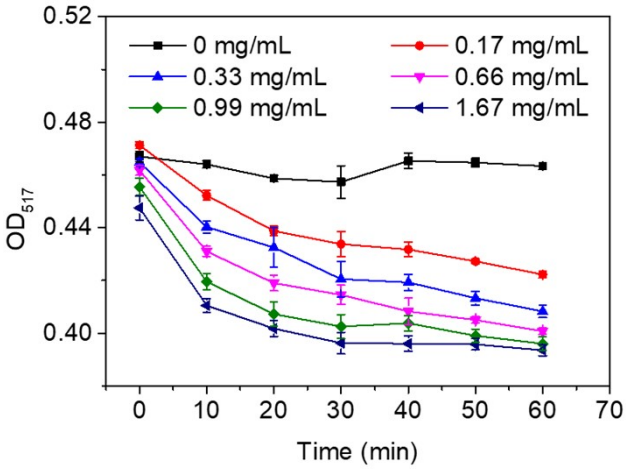

Fig. S7 Scavenging activity of N-SiQDs to DPPH radicals.

Table S1 The comparison of N-SiQDs-AuNPs and reported gold nanoparticles for the catalytic degradation of 4-NP.

Catalyst	Composition	Catalytic rate constant (k) (10^{-3} s^{-1})	Reference
PVP_{12}-AuNPs	PVP (12 mM) coated gold nanoparticles	6.8	1
PVP_{25}-AuNPs	PVP (25 mM) coated gold nanoparticles	3.9	
PVP_{50}-AuNPs	PVP (50 mM) coated gold nanoparticles	3.9	
AuNP-CC	Gold nanoparticles prepared with Citrus limon juice as reductant	0.139	2
GNT–AAO	Gold nanotube/porous anodic aluminium oxide composite membrane	0.132	3
SiNWs–AuNPs	Gold nanoparticles coated silicon nanowires	0.204	4
Cirtic-AuNPs	Sodium citrate stabilized gold nanoparticles	1.690	This work
N-SiQDs-AuNPs	Nanocomposites with N-SiQDs and gold nanoparticles	19.31	This work

References

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