

ADVANCED FUNCTIONAL MATERIALS

Supporting Information

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Quaternized Silicon Nanoparticles with Polarity-Sensitive
Fluorescence for Selectively Imaging and Killing Gram-
Positive Bacteria

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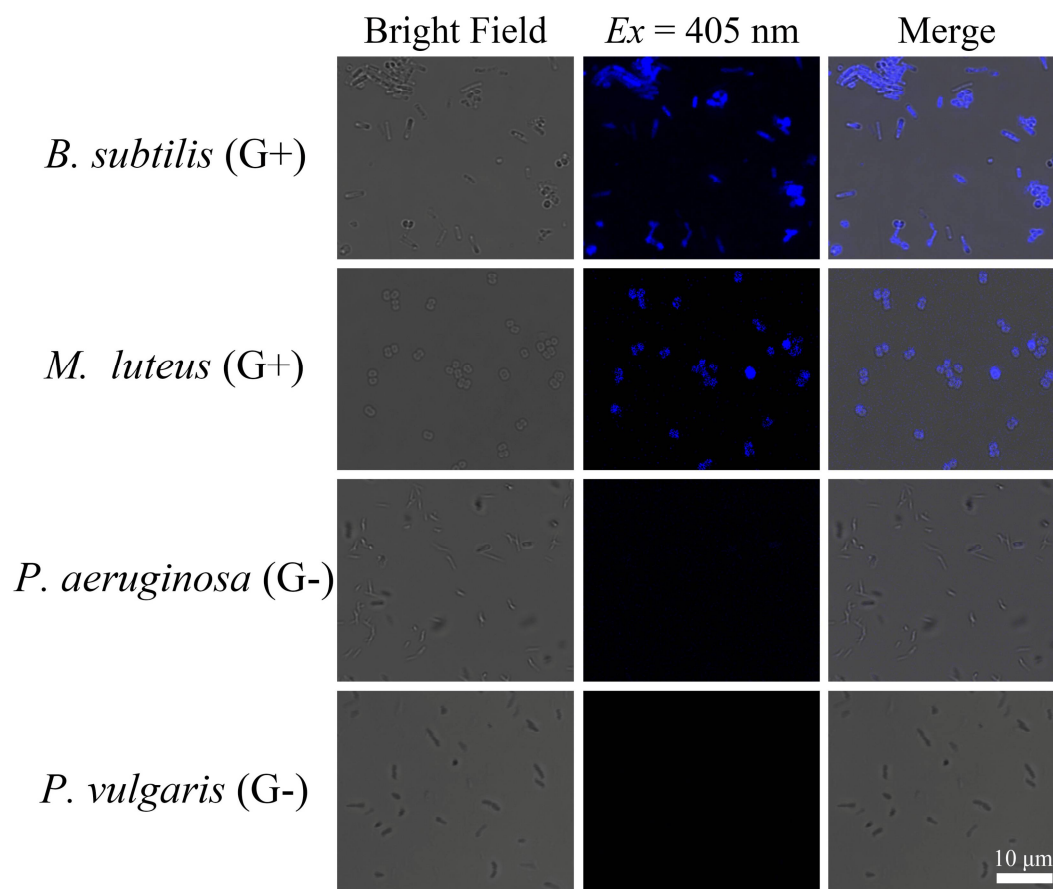


Figure S1. Confocal fluorescence images of four kinds of bacteria treated with 0.5 $\mu\text{g/mL}$ SiNPs-C₁₈.

Table S1. Minimum inhibitory concentrations (MICs) of SiNPs-C₁₂, SiNPs-C₁₄, SiNPs-C₁₆, SiNPs-C₁₈, BS-12, BS-14, BS-16, and BS-18 for *E. coli* and *S. aureus*.

	MIC ($\mu\text{g/mL}$)	
	<i>E. coli</i>	<i>S. aureus</i>
SiNPs-C ₁₂	>40	35
SiNPs-C ₁₄	>40	20
SiNPs-C ₁₆	>40	4
SiNPs-C ₁₈	>40	1
BS-12	>40	>40
BS-14	>40	30
BS-16	>40	6
BS-18	>40	2

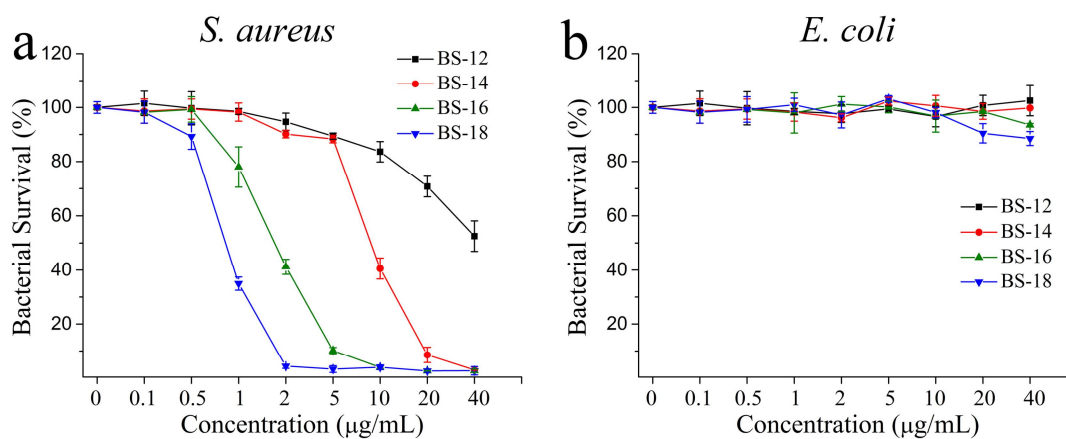


Figure S2. Concentration-dependent antimicrobial activities of free BS-12, BS-14, BS-16, and BS-18 for a) *S. aureus* and b) *E. coli*.

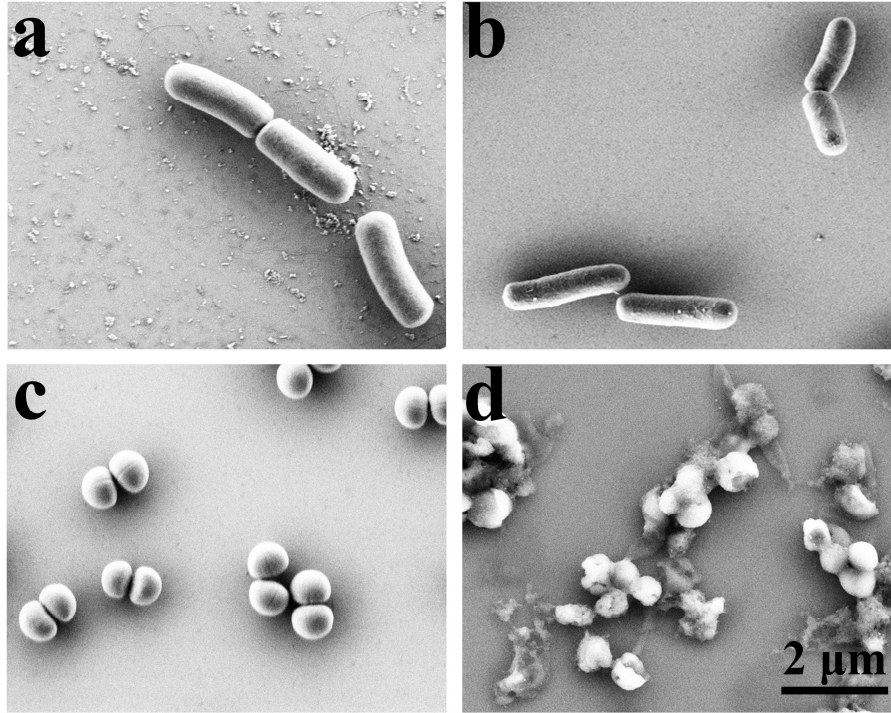


Figure S3. SEM images of a, b) *E. coli* and c, d) *S. aureus* cells a, c) without and b, d) with the treatment of 1 µg/mL SiNPs-C₁₈ for 2 h.

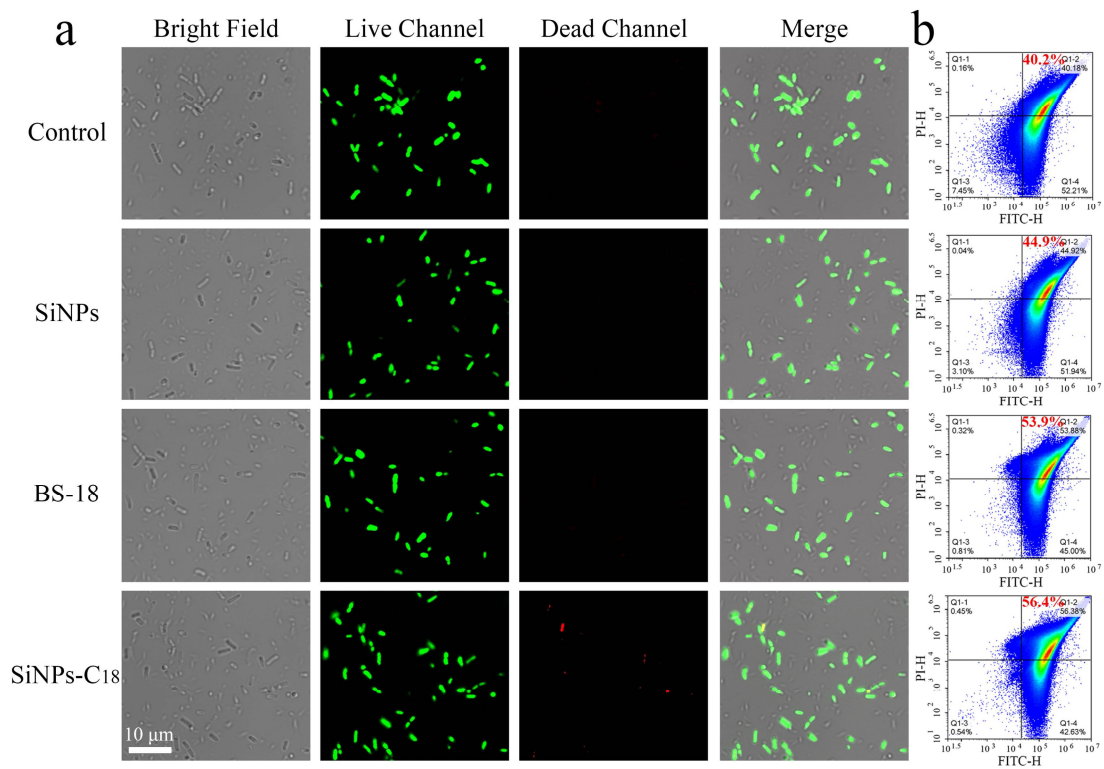


Figure S4. a) Confocal fluorescence images of *E. coli* stained with BacLight Live/Dead kit showing the presence (or absence) of live bacteria (green) and dead

bacteria (red) in the LB solutions without the treatment (control) and with the treatments of 1.0 $\mu\text{g/mL}$ SiNPs, BS-18, and SiNPs-C₁₈, and b) the corresponding results obtained by flow cytometry.

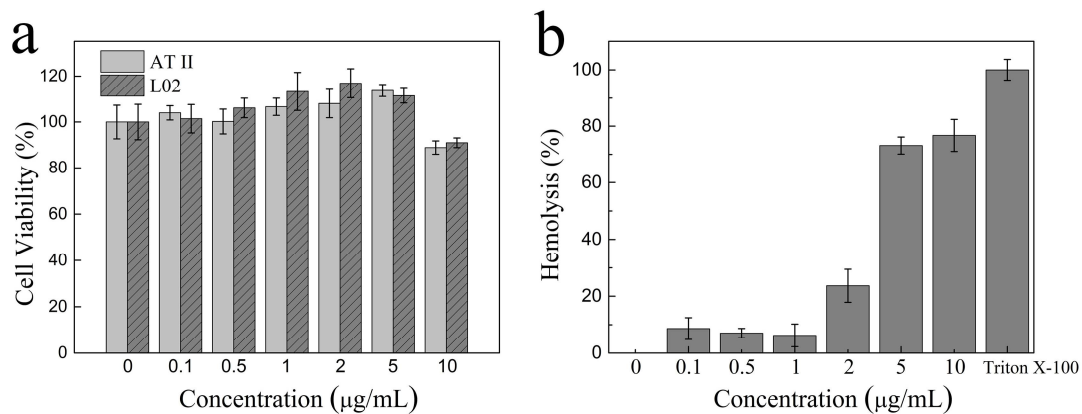


Figure S5. a) Cell viabilities of AT II and L02 cells treated with different dosages of BS-18. b) Hemolytic results of different concentrations of BS-18. Triton X-100 was used as a positive control in the hemolytic experiments.