

Supporting Information for

Cationic and Anionic Antimicrobial Agents Co-templated Mesostructured Silica Nanocomposites with a Spiky Nanotopology and Enhanced Biofilm Inhibition Performance

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Supplementary Figures and Table

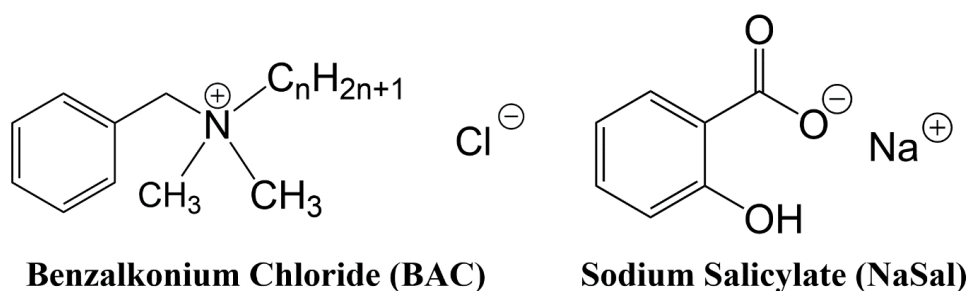


Fig. S1 Chemical structure of BAC and NaSal

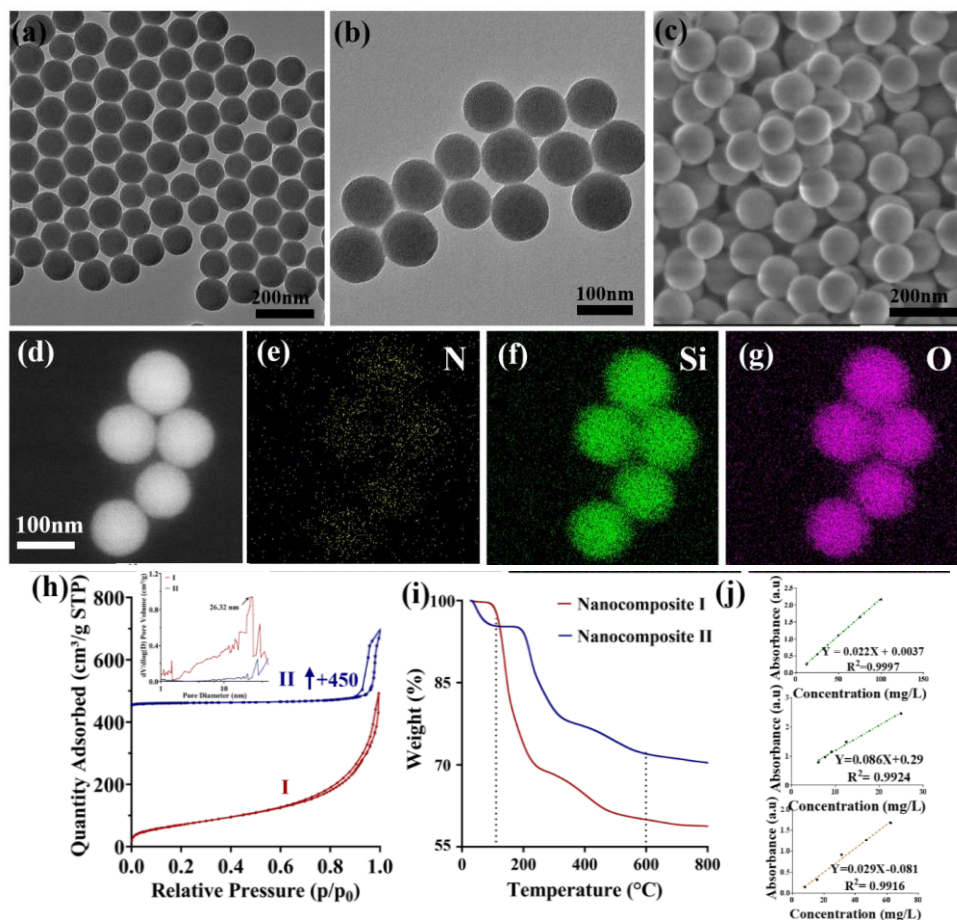


Fig. S2 TEM (a, b), SEM (c) and EDX elemental mapping (d-g) images of nanocomposite II Nitrogen adsorption-desorption isotherm (h) and (h-inserted) pore size distribution curves calculated from the adsorption branch using the Barrett–Joyner–Halenda (BJH) model of nanocomposite I and II TGA curves (i) of nanocomposite I and II Standard curves (j) for UV-Vis quantification of NaSal at 299 nm (top); NaSal at 209 nm (middle); and BAC at 209 nm (bottom)

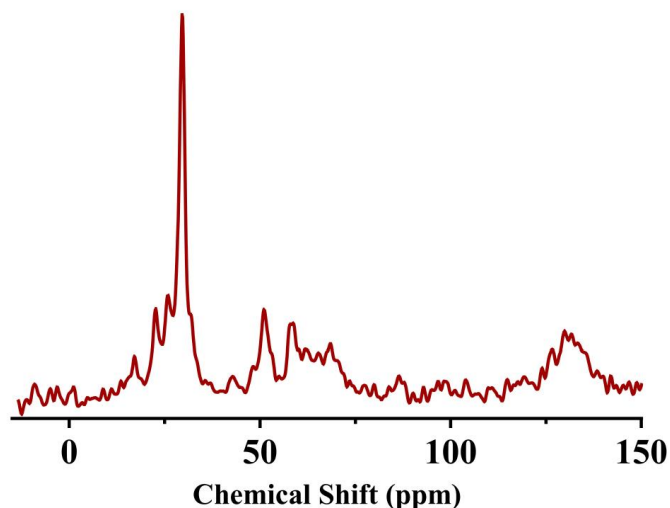


Fig. S3 ^{13}C MAS NMR spectrum of nanocomposite I

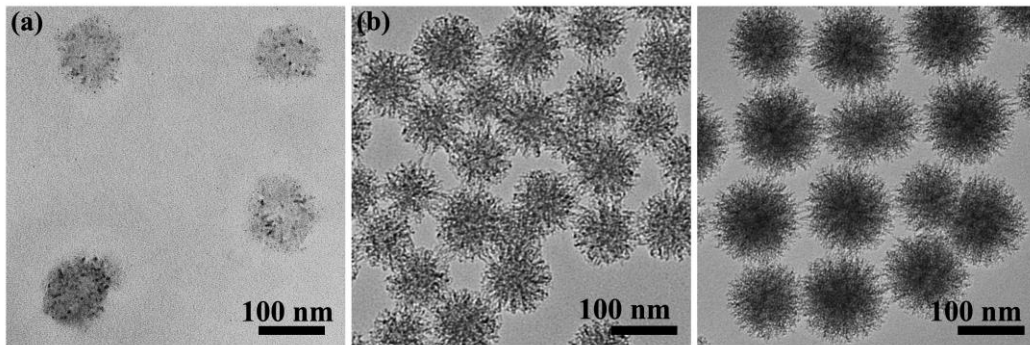


Fig S4 Time-dependent investigation of nanocomposite **I** TEM images of intermediate structures collected at reaction time of (a) 15 min, (b) 20 min and (c) 40 min

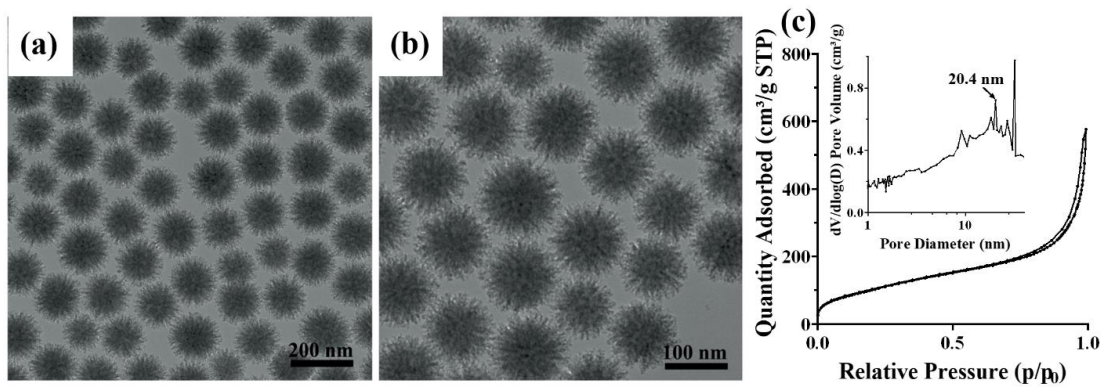


Fig S5 TEM images (a, b); Nitrogen adsorption-desorption isotherm (c) and pore size distribution curves (c-inserted) of calcined nanocomposite **I** (denoted as I-calcined). I-calcined was prepared through 550 °C calcination of nanocomposite **I**

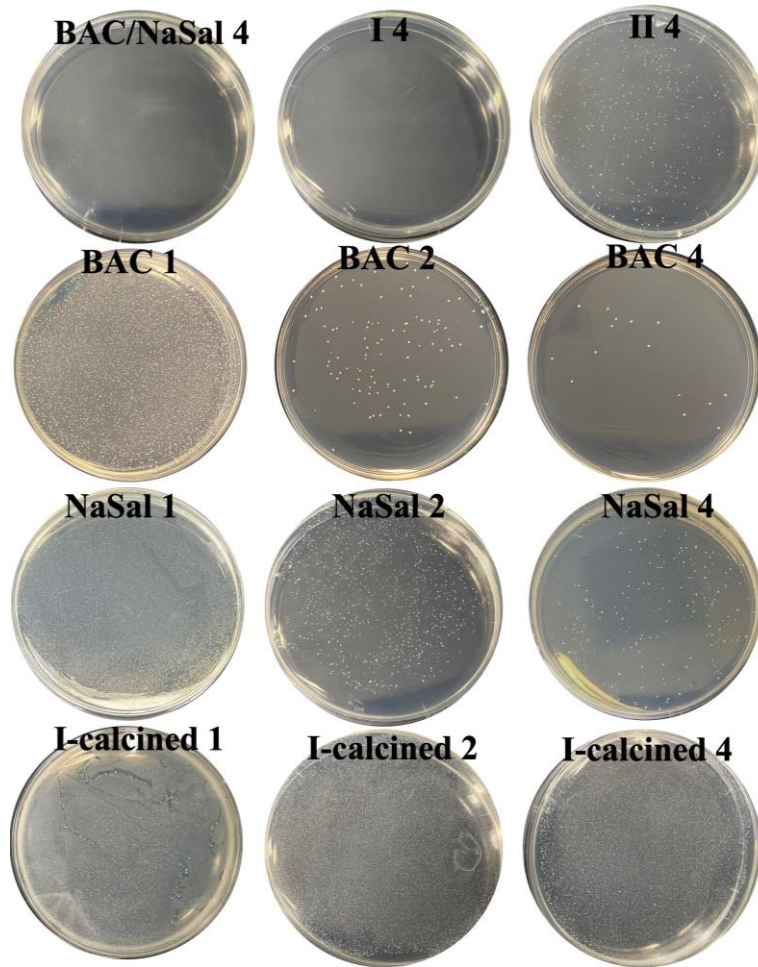


Fig. S6 Photographs of plates containing *S. epidermidis* culture treated with BAC, NaSal, and I-calcined (1, 2, and 4 represents the BAC concentration of 1, 2, and 4 $\mu\text{g L}^{-1}$)

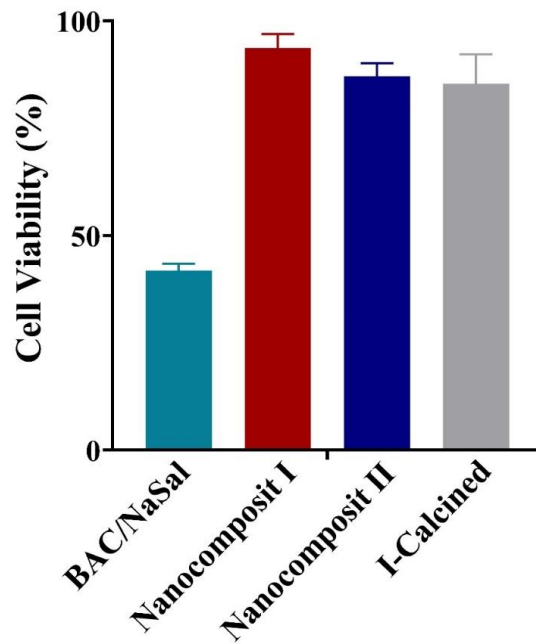


Fig. S7 Cytotoxicity in HEK239T cells after 24 h incubation with BAC/NaSal, nanocomposites I/II/ and calcined-I at the concentration of 1 $\mu\text{g BAC mL}^{-1}$

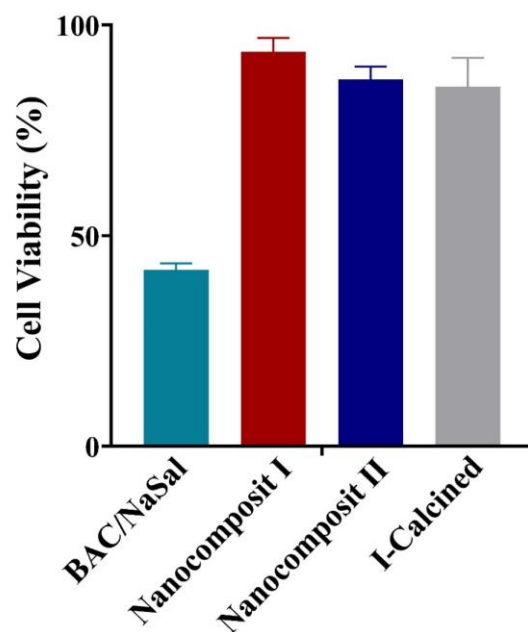


Fig. S8 Bacterial silica uptake/adhesion of nanocomposites **I/II** and **I-Calcined** at the concentration of $1 \mu\text{g BAC mL}^{-1}$

Table S1 Physical Properties of nanoparticles

Sample name	Z-average (nm) /PDI	Surface area ($\text{m}^2 \text{g}^{-1}$)	Pore volume ($\text{cm}^3 \text{g}^{-1}$)	Surface charge (mV)
Nanocomposite I	139/0.10	290	0.69	-12.90
Nanocomposite II	114/0.18	86	0.34	-15.80
I-calcined	145/0.12	821	0.96	-23.55