

Supporting Information

Highly Efficient Antimicrobial and Antifouling Surface Coatings with Triclosan-Loaded Nanogels

*Damla Keskin, Lisa Tromp, Olga Mergel, Guangyue Zu, Eliza M. Warszawik, Henny C. van der Mei, Patrick van Rijn**

University of Groningen and University Medical Center Groningen, Department of Biomedical Engineering, W. J. Kolff Institute for Biomedical Engineering and Materials Science, A. Deusinglaan 1, 9713 AV, Groningen, The Netherlands

Corresponding Author

*E-mail: p.van.rijn@umcg.nl (P.v.R)

Supporting Information Figure S1: *N-nGel synthesis and the quaternization reaction to Q- μ Gel.*

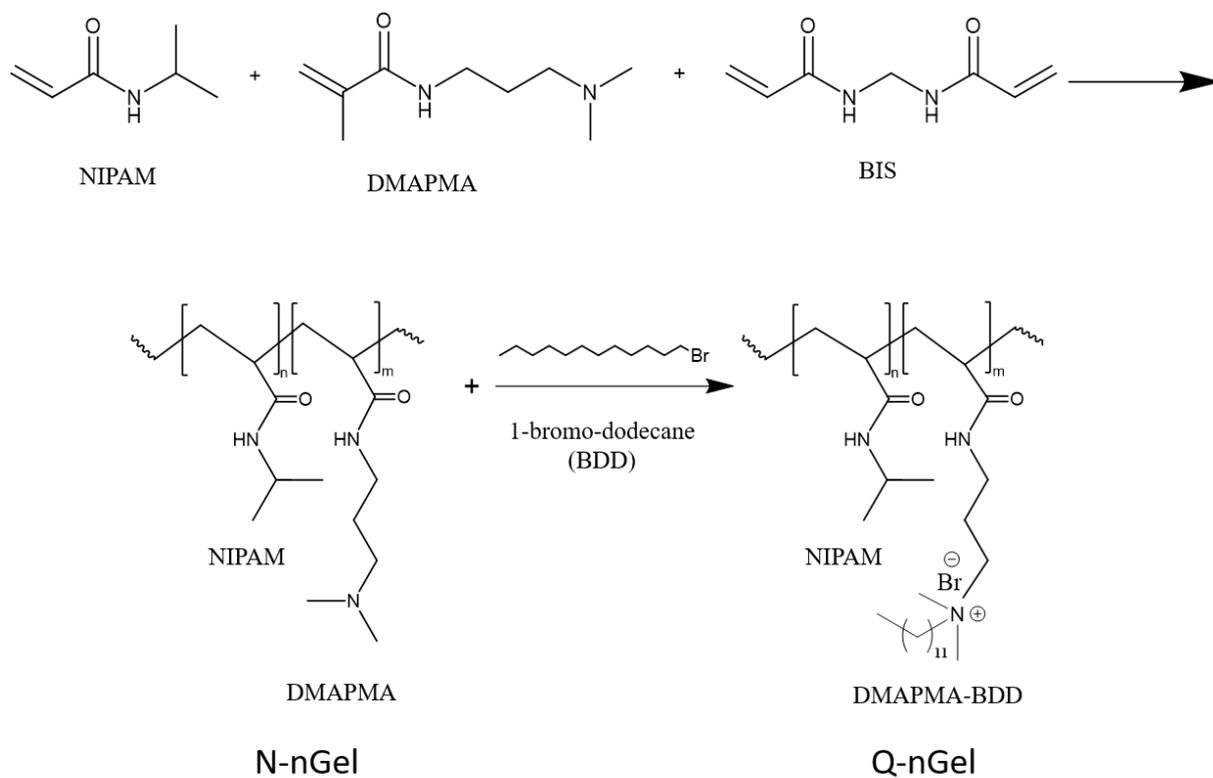


Figure S1. N-nGel synthesis and the quaternization reaction to Q-nGel.

Supporting Information Figure S2: $^1\text{H-NMR}$ spectrum corresponding to *N-nGel* and *Q-nGel*.

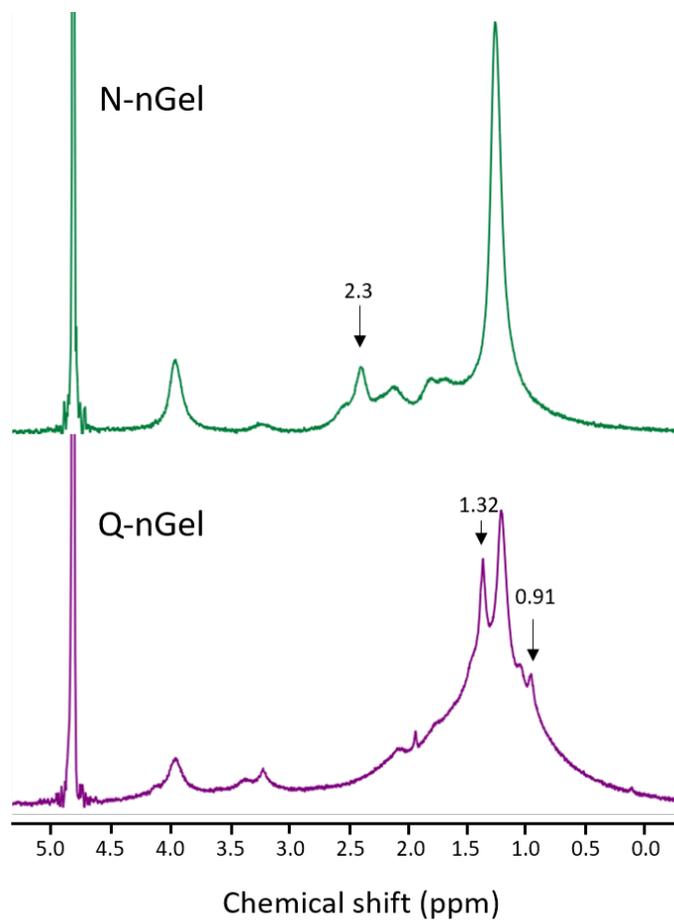


Figure S2. $^1\text{H-NMR}$ spectrum corresponding to *N-nGel* and *Q-nGel*.

Supporting Information Figure S3: *Hydrodynamic radius (R_h) as a function of the temperature of N-nGel and Q-nGel.*

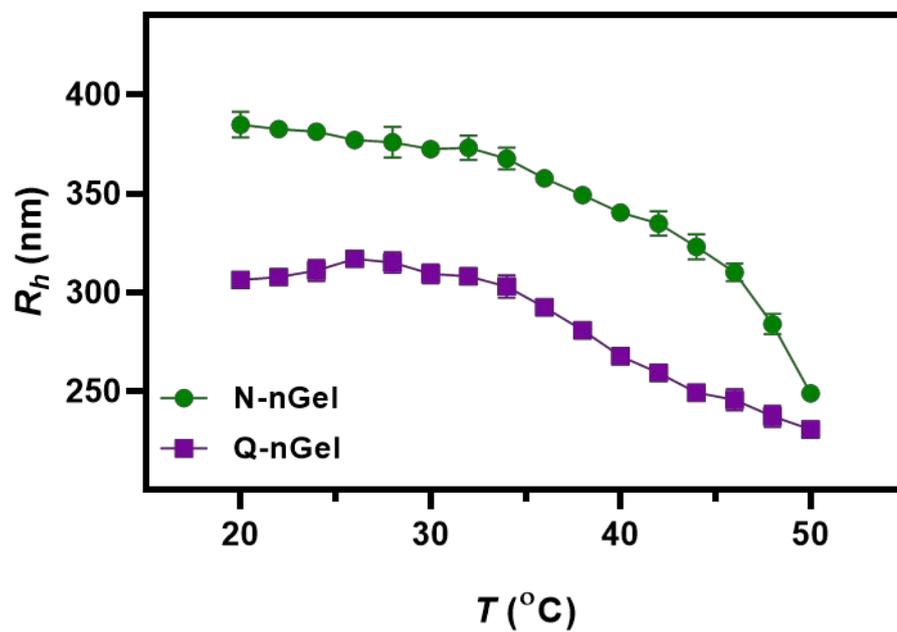


Figure S3. Hydrodynamic radius (R_h) as a function of the temperature of N-nGel and Q-nGel.

Supporting Information Figure S4: *AFM images of a) Q-nGel coating on plasma oxidized glass surface, b) PEI and subsequent PSS coating on the glass surface at 23 °C in the dry state.*

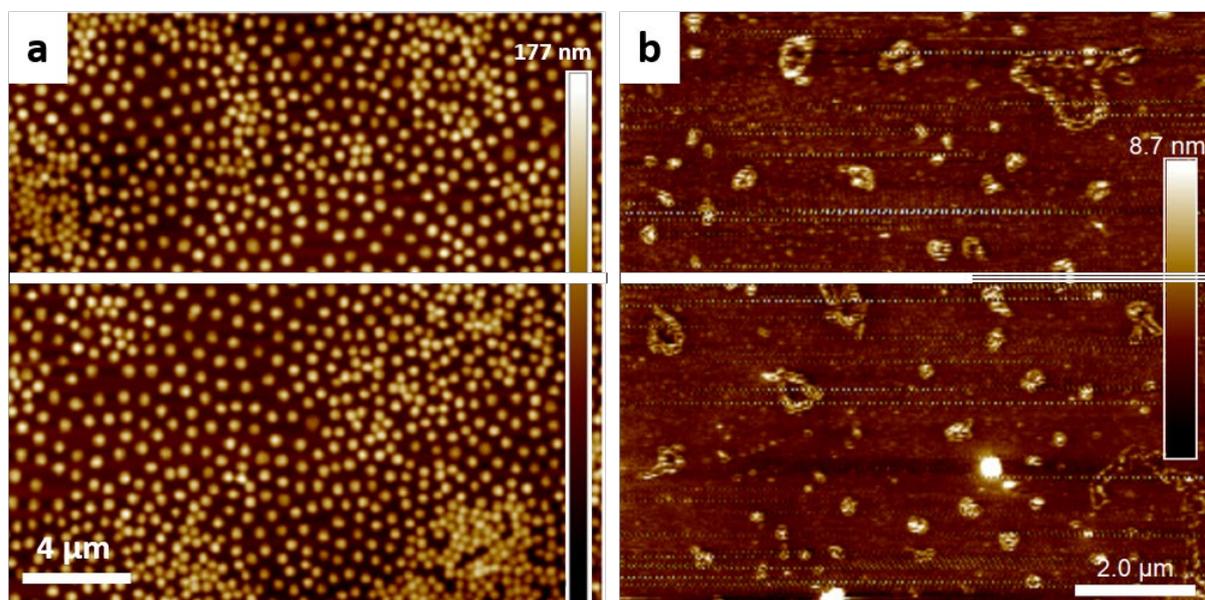


Figure S4. AFM images of a) Q-nGel coating on plasma oxidized glass surface, b) PEI and subsequent PSS coating on the plasma oxidized glass surface at 23 °C in the dry state.

Supporting Information Figure S5: *Triclosan incorporation and AFM images of loaded Q-nGel coating after washing.*

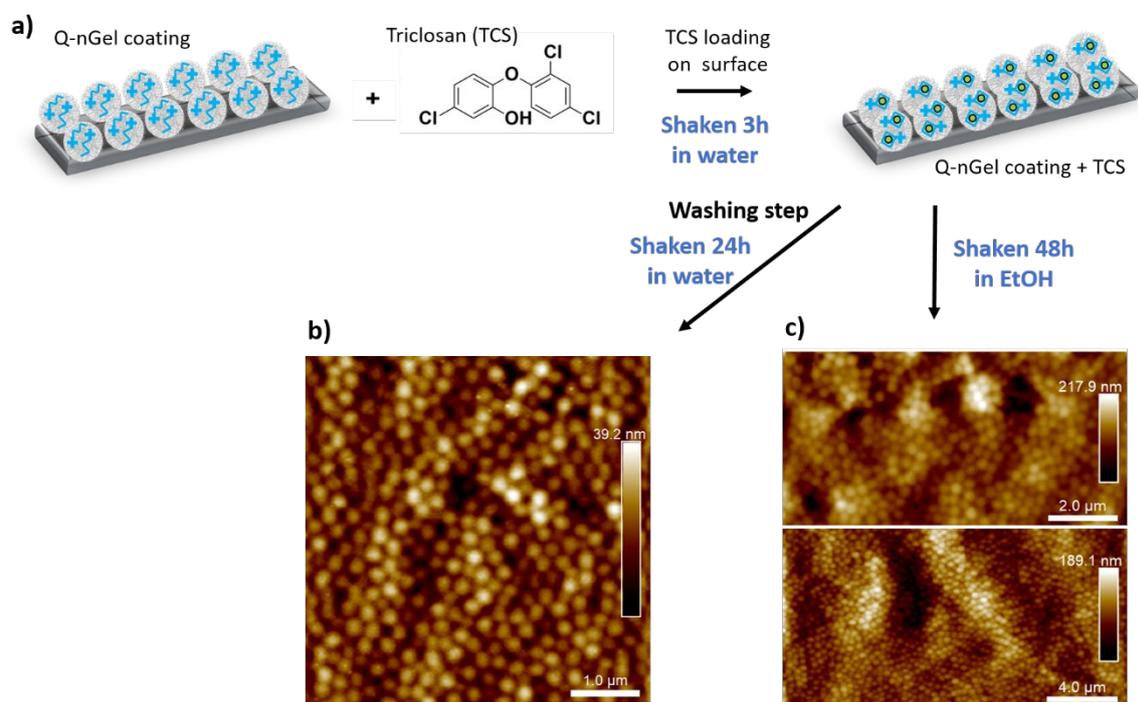


Figure S5. a) Schematic illustration of Triclosan incorporation for 3h and b) Following the washing procedure for 24h in water, AFM picture is taken in dry state after the washing step c) The stability test performed in EtOH for 48 shaking the Q-nGel coating+TCS, AFM picture is taken in dry state after this step.

Supporting Information Figure S6: *Petrifilm*[®] plate images of *S. aureus* ATCC 12600 after a 48 h incubation on the surface of uncoated glass, N-nGel coating, Q-nGel coating, and Q-nGel coating+TCS.

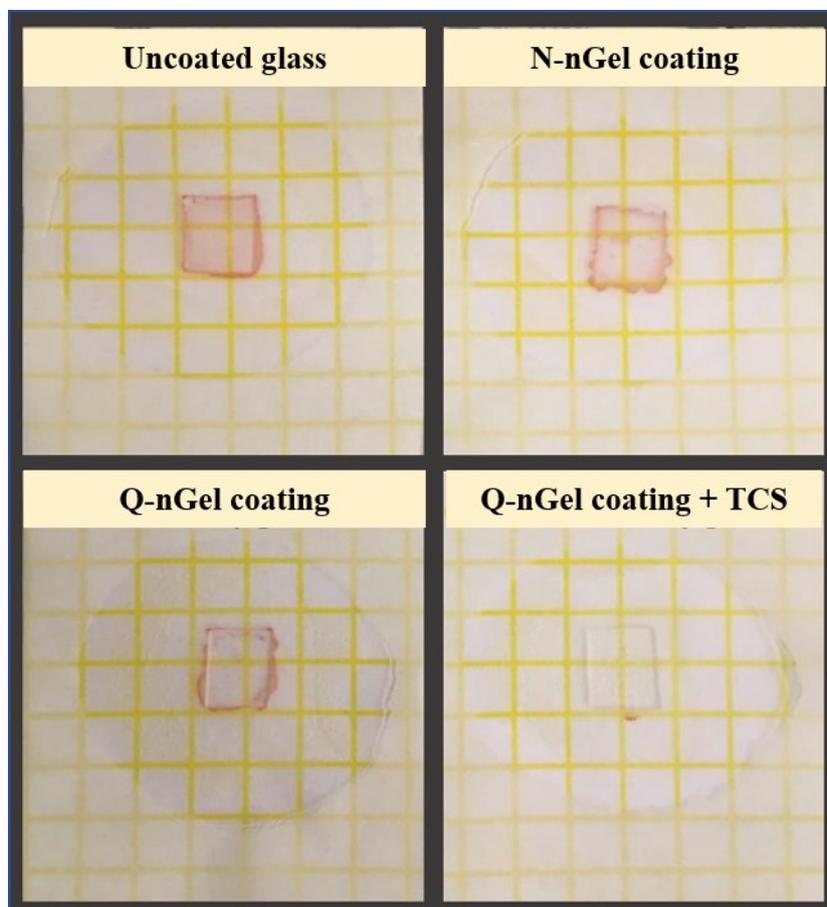


Figure S6. *Petrifilm*[®] plate images of *S. aureus* ATCC 12600 after a 48 h incubation on the surface of uncoated glass, N-nGel coating, Q-nGel coating, and Q-nGel coating+TCS.

Supporting Information Table S1: *Contact killing capability of the nanogel coatings using the Petrifilm® system*

Table S1. Contact killing capability of the nanogel coatings using the Petrifilm® system

Coating	Contact-killing (2 days)
Uncoated glass	NO
N-nGel coating	NO
Q-nGel coating	YES
Q-nGel coating +TCS	YES

Supporting Information Figure S7: *Triclosan loading and stability of confinement analysis*

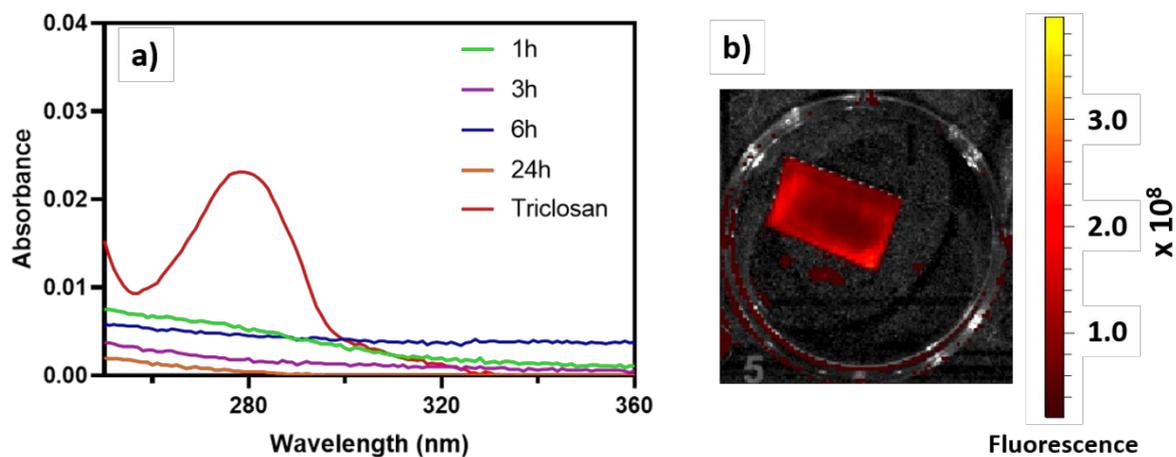


Figure S7. a) UV-vis absorption spectra of Triclosan and Triclosan loaded nanogel coatings (Q-nGel coating+TCS) in water. b) Representative fluorescence images taken by IVIS of Q-nGel coating with Nile Red loading after 24 hours of washing in water.