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

Supporting Information

Controlled grafted poly(quartanized-4-vinylpyridine-co-acrylicacid) brushes allure bacteria for effective antimicrobial surfaces

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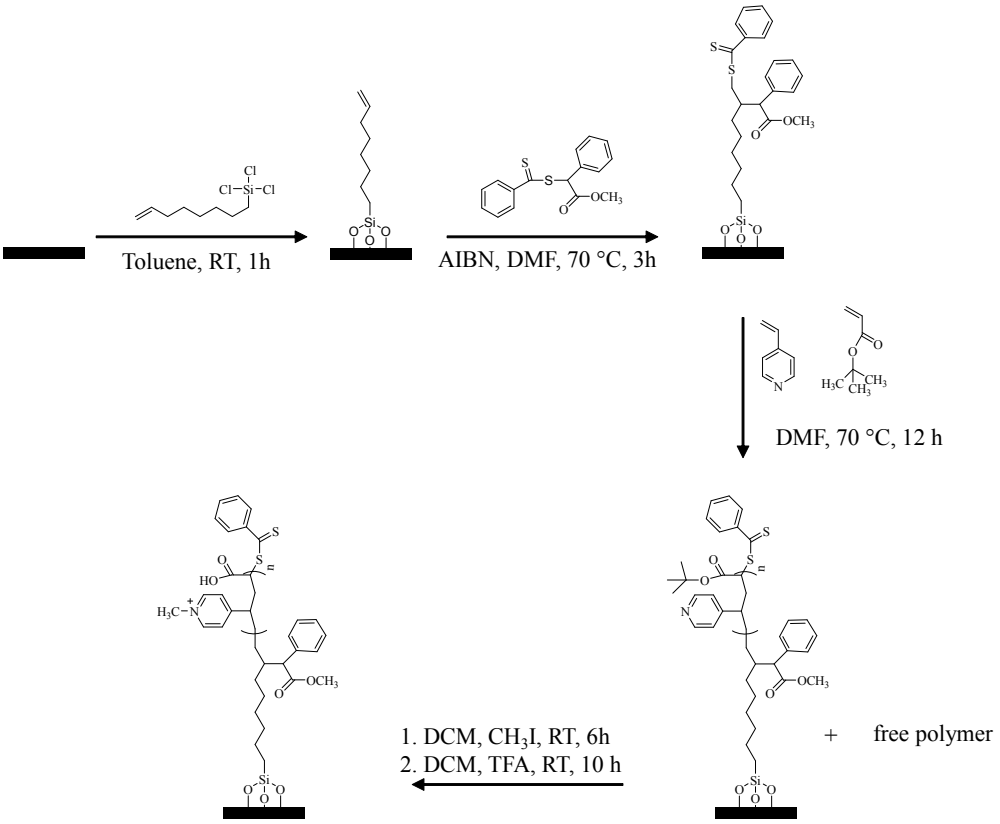

Scheme S1. Synthetic pathway of P(Q4VP-co-AA) brushes via modified SI-RAFT polymerization.

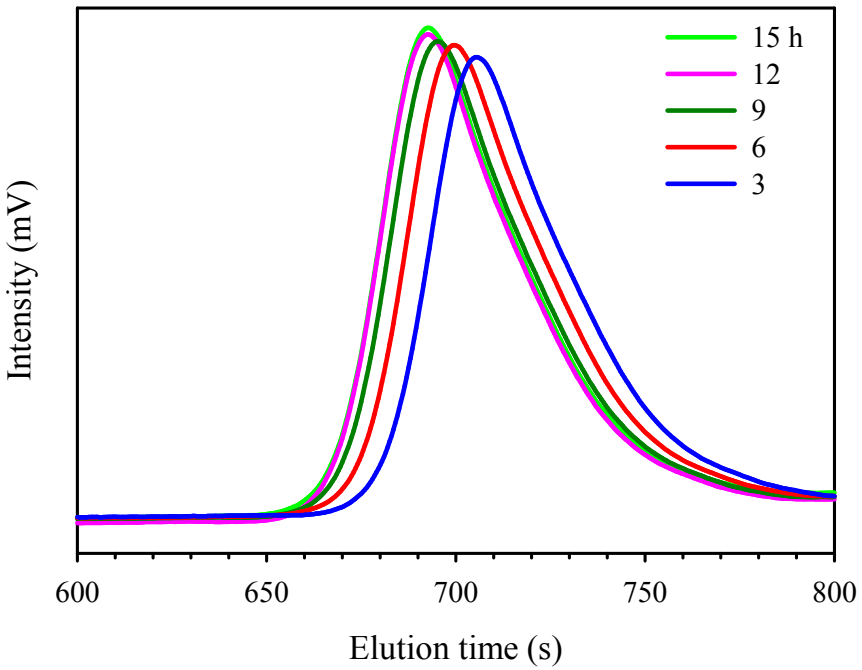

Figure S1. Gel permeable chromatogram of P(4VP-co-tBA) at different reaction time.

Table S1. The molecular weight of P(4VP-co-tBA) with respect to polymerization time. The reaction temperature was 70 °C at a given ratio of DMF solvent.

Reaction Time (h)	Weight average molecular weight (Mw)	Number average molecular weight (Mn)	PDI
3	8,054	7,065	1.14
6	10,731	9,414	1.14
9	12,063	10,676	1.13
12	13,939	12,228	1.14
15	14,047	12,110	1.16

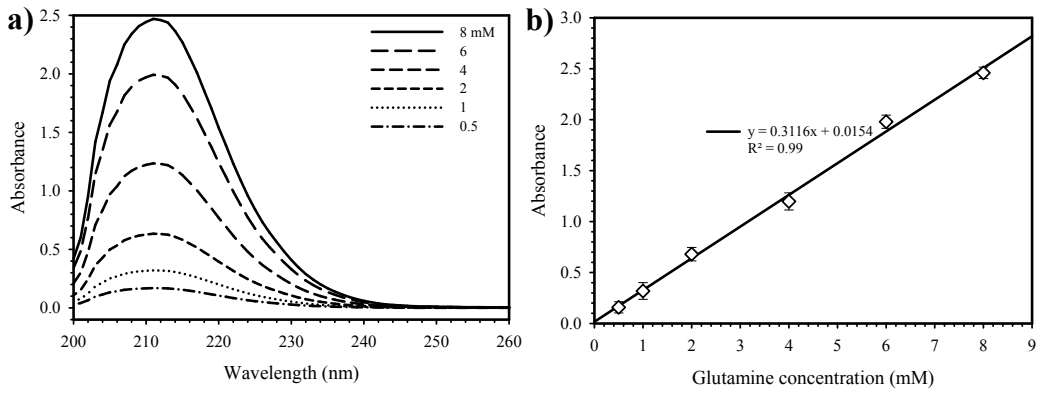

Figure S2. (a) UV-visible absorption spectra and (b) a linear plot of absorbance (right) glutamine at different concentration.

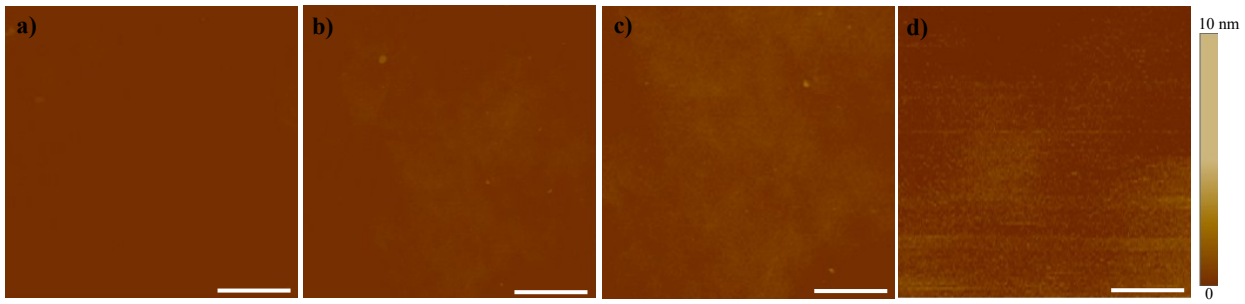

Figure S3. AFM images of SW-7OTS at 7OTS concentration of (a) 10, (b) 50, (c) 100, and (d) 150 mM. The scale bars are 250 nm.

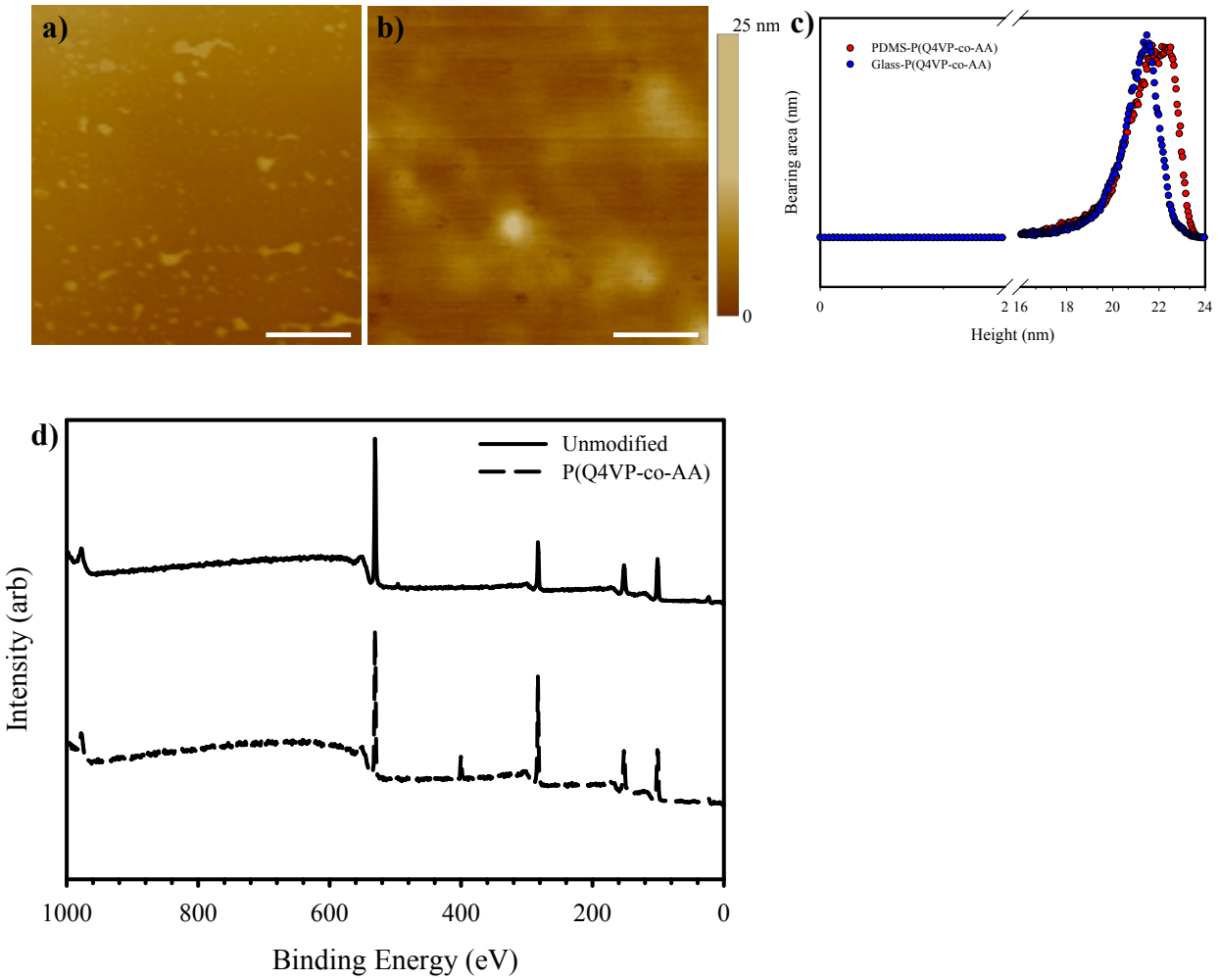

Figure S4. AFM images of P(Q4VP-co-AA) brushes on (a) glass and (b) PDMS substrates. (c) height profile from (a) and (b). The scale bars are 250 nm. (d) XPS spectra of unmodified and P(Q4VP-co-AA) coated glass.

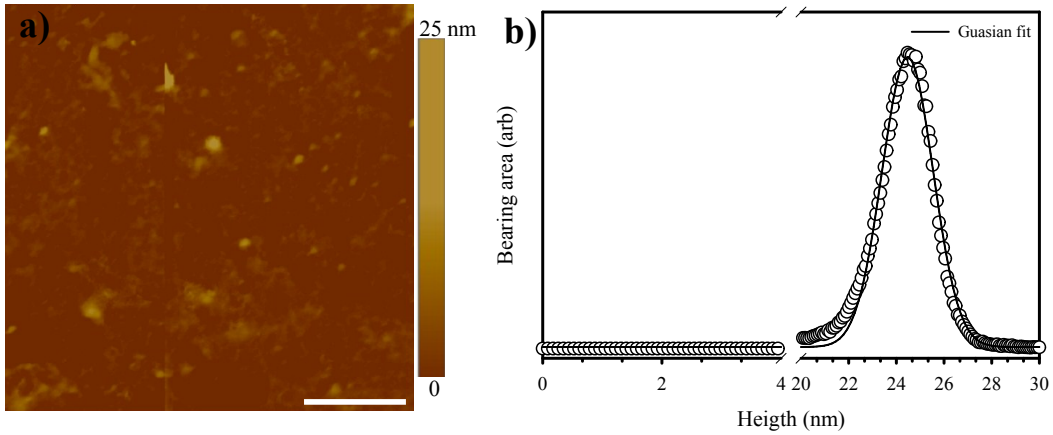

Figure S5. (a) AFM image and (b) height profile of SW-P(Q4VP-co-AA) brushes after GA adsorption. The scale bar is 250 nm and initial GA concentration was 15 mM.

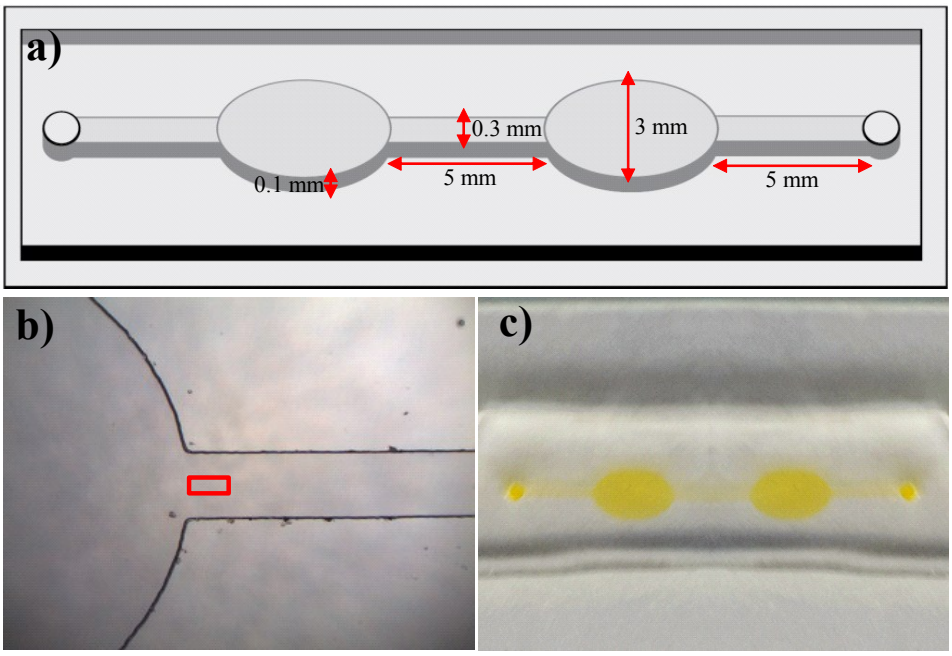

Figure S6. (a) Schematic, (b) optical, and (c) camera image of the microfluidic device. The numerals and arrows in (a) represent the dimensions of the microfluidic channel. Red color rectangle in (b) denotes the location of recording Movie S1 and Movie S2. The yellow color in (c) is a dye to visualize the channel.

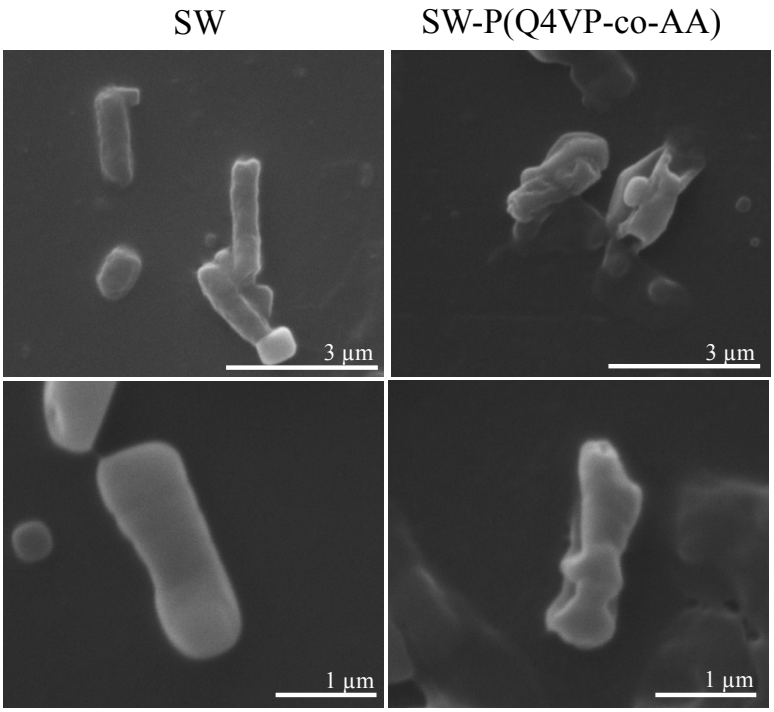

Figure S7. SEM images of E. coli on SW and SW-P(Q4VP-co-AA) brushes at different magnifications.

(Note: All movies were change to 4x speed to meet the size criteria of the journal)

Movies S1. The motion of E. coli in microfluidic channel toward the P(Q4VP-co-AA)-GA modified brushes. The video was Stack de-flickered followed by background subtraction. The frame rate is 30 frame/sec.

Movies S2. The motion of S. aureus in microfluidic channel toward the P(Q4VP-co-AA)-GA modified brushes. The video was Stack de-flickered followed by background subtraction. The frame rate is 30 frame/sec.

Movie S3. The motion of E. coli in unmodified microfluidic device.