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PAPER

Electronic Supplementary Information

Step-wise control of protein adsorption and bacterial attachment on a nanowire array surface: tuning surface wettability by salt concentration†

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1. The effect of NaCl on protein adsorption and bacterial attachment to bare SiNWAs.

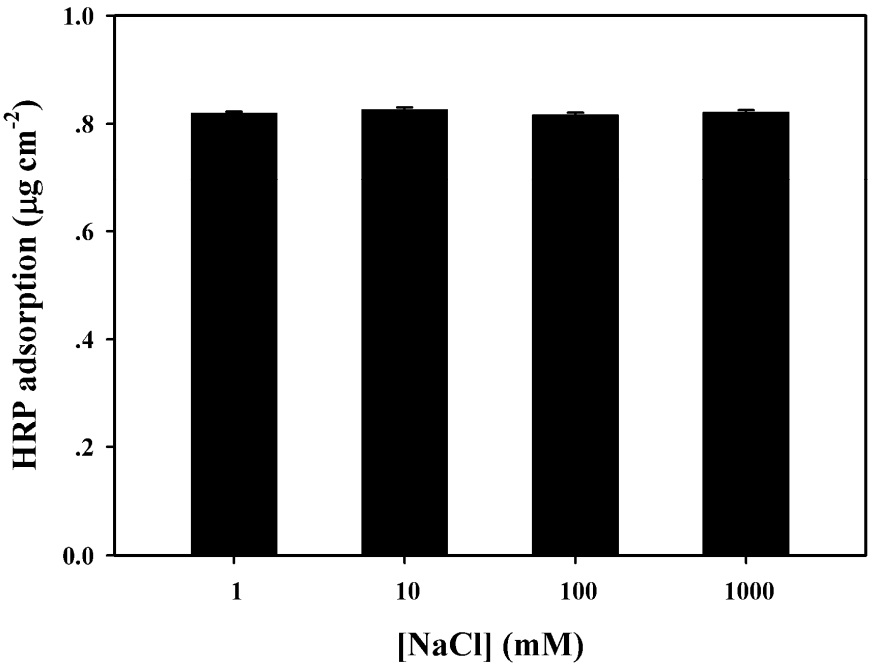

Fig. S1 Effect of NaCl on HRP adsorption to SiNWAs at pH 7.0. Data are the means of three independent experiments with bar as SE. There is no significant difference of HRP adsorption on SiNWAs in different NaCl concentrations.

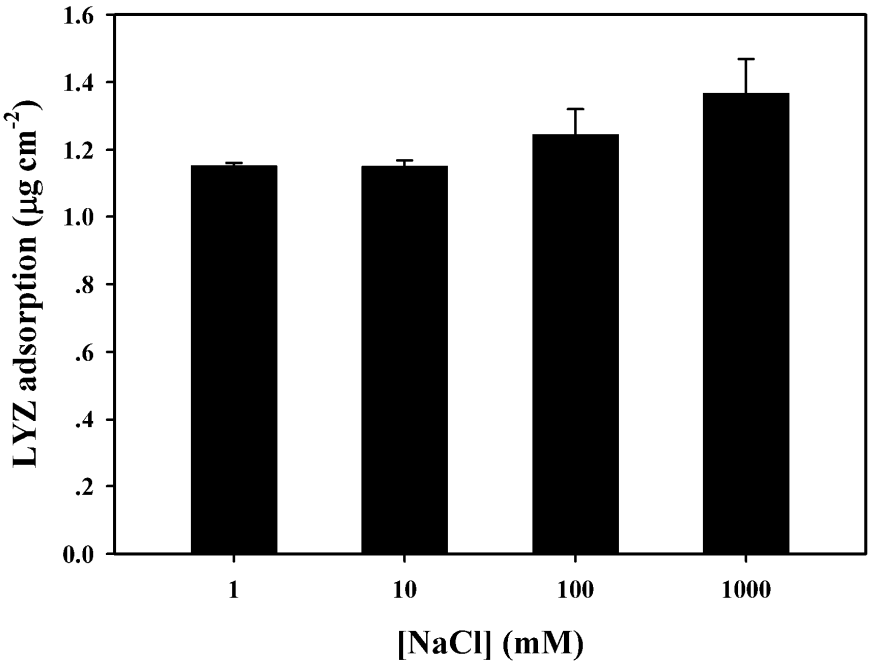

Fig. S2 Effect of NaCl on LYZ adsorption to SiNWAs at pH 7.0. Data are the means of three independent experiments with bar as SE. There is no significant difference of LYZ adsorption on SiNWAs in different NaCl concentrations.

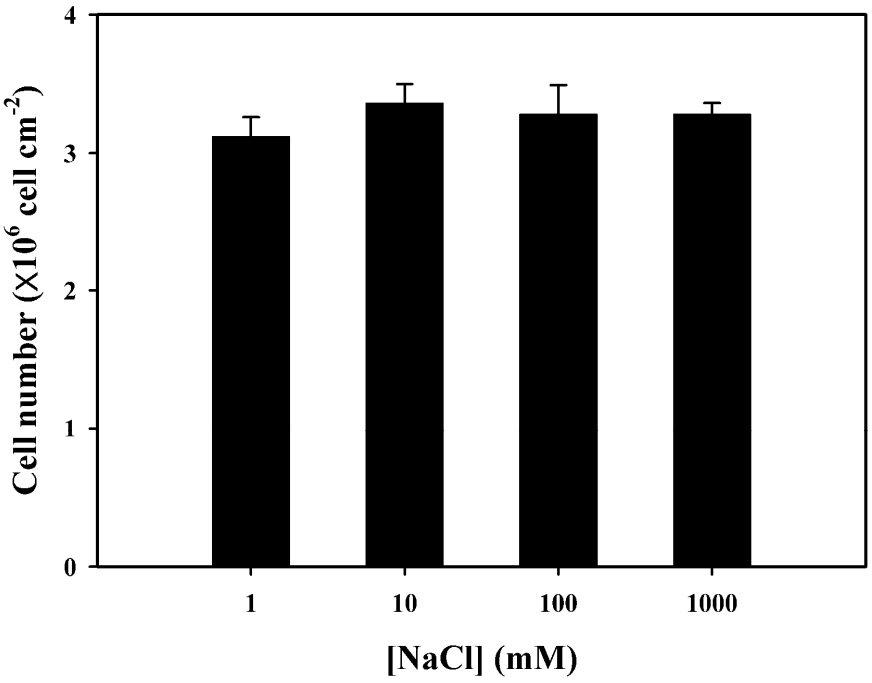

Fig. S3 Effect of NaCl on bacterial attachment to SiNWAs at pH 7.0. Data are the means of three independent experiments with bar as SE. There is no significant difference of bacterial attachment on SiNWAs in different NaCl concentrations.

2. The effect of NaCl on the activities of proteins and the viability of bacterial cell adsorbed on PDMAEMA modified SiNWAs.

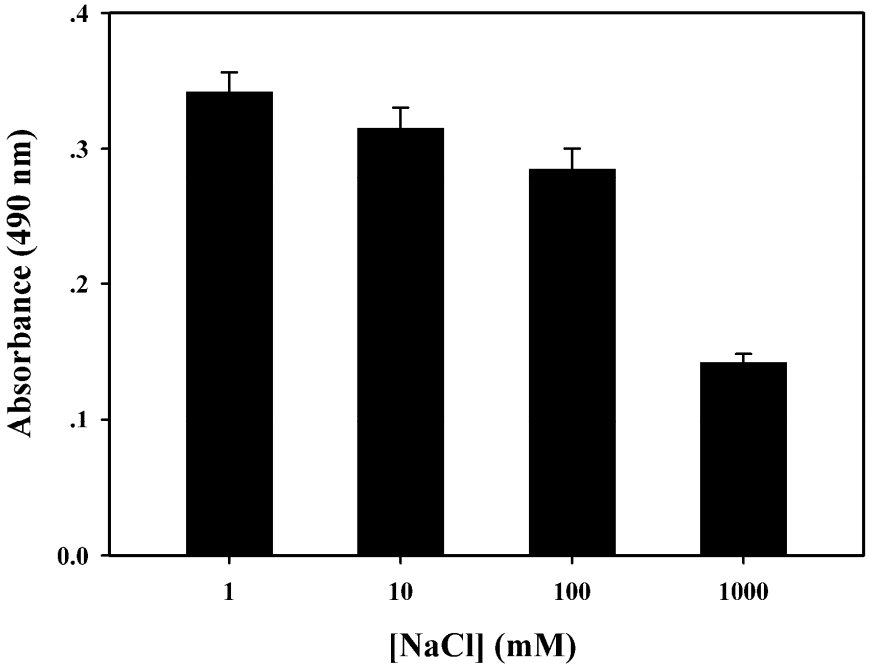

Fig. S4 Activity of HRP adsorbed on PDMAEMA modified SiNWAs at pH 7.0. HRP activity was determined by the oxidation of o-phenylenediamine according to Bovaird *et al*. [1] Data are the means of three independent experiments with bar as SE.

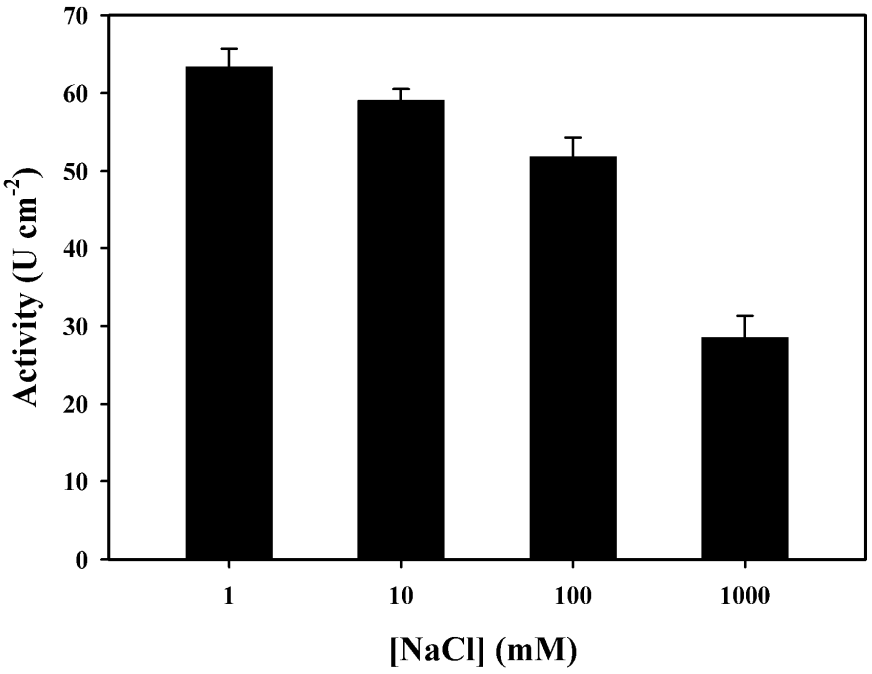

Fig. S5 Activity of LYZ adsorbed on PDMAEMA modified SiNWAs at pH 7.0. LYZ activity was determined by the hydrolysis of a fluorescent substrate in the EnzChek Lysozyme Assay kit (Invitrogen) according to Zhou *et al*. [2] Data are the means of three independent experiments with bar as SE.

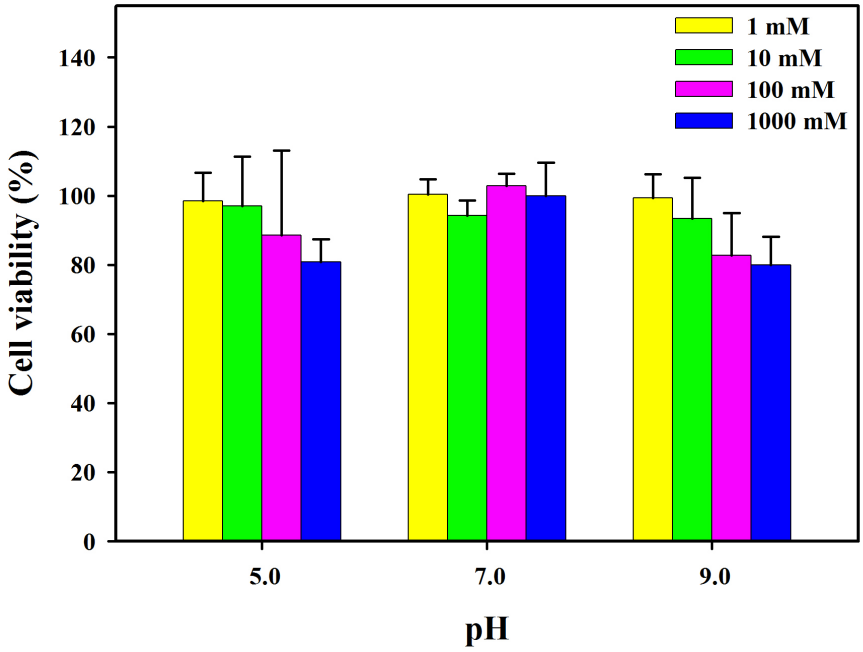

Fig. S6 The viability of *E. coli* cells attached to PDMAEMA modified SiNWAs. Cell viability was measured by colony forming test according to Wang *et al.* [3] And it was calculated by dividing the number of live cells (those attached to PDMAEMA modified SiNWAs and form colonies) by the total number of cells attached to PDMAEMA modified SiNWAs. Data are the means of 3-5 independent experiments with bar as SE.

3. The effect of pH on protein adsorption and bacterial attachment to PDMAEMA modified SiNWAs.

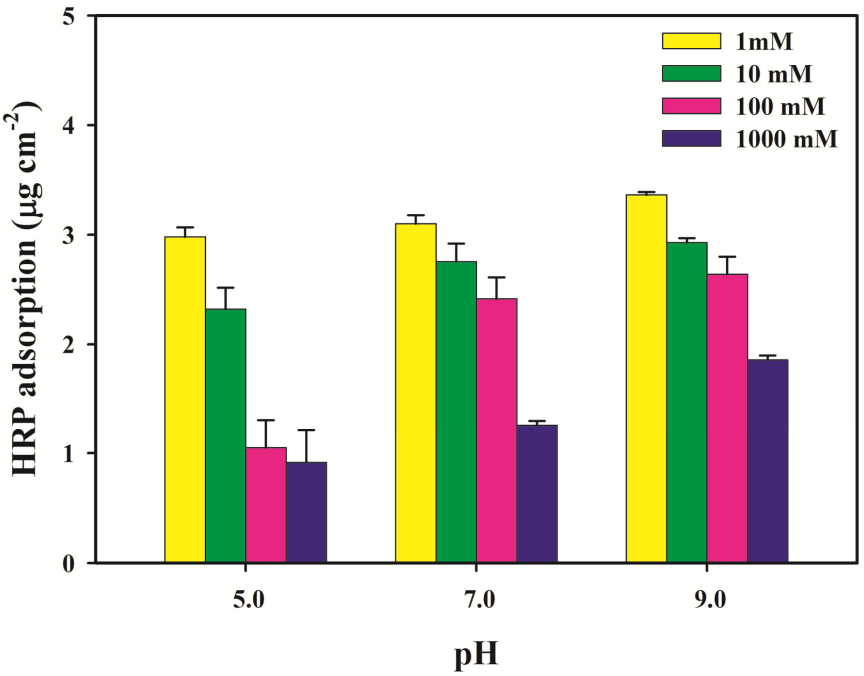

Fig. S7 Effect of pH and NaCl on HRP adsorption to PDMAEMA modified SiNWAs. Data are the means of three independent experiments with bar as SE.

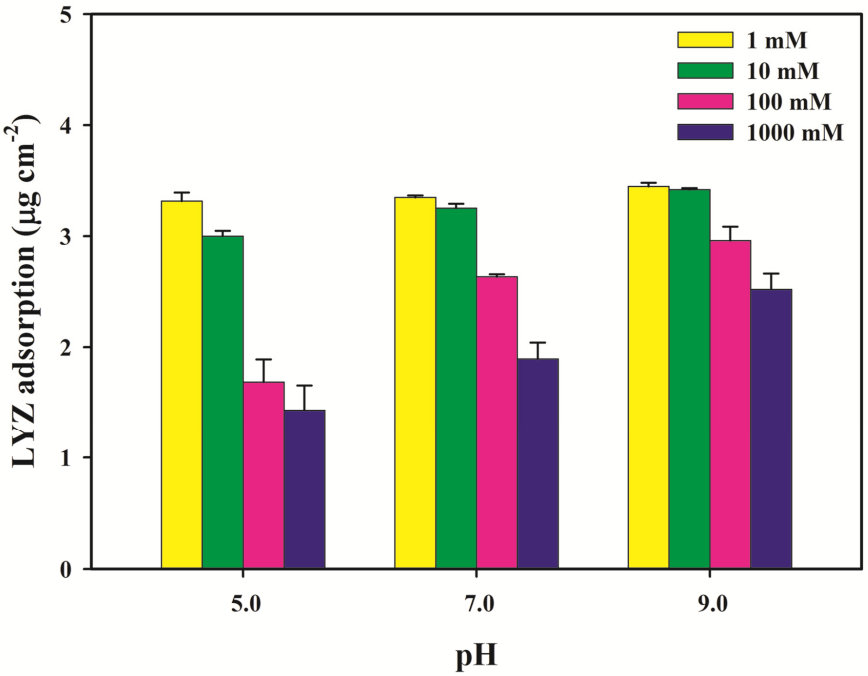

Fig. S8 Effect of pH and NaCl on LYZ adsorption to PDMAEMA modified SiNWAs. Data are the means of three independent experiments with bar as SE.

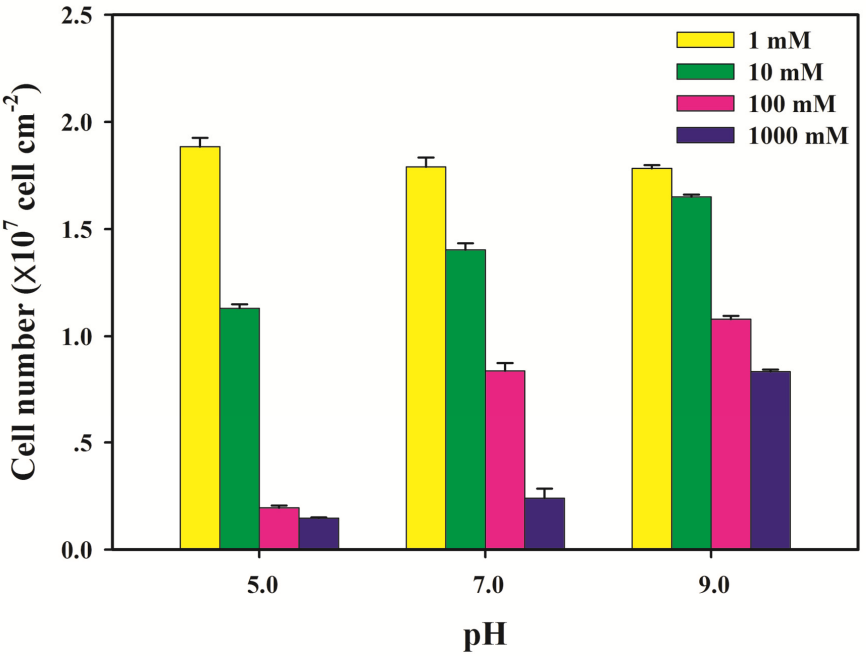

Fig. S9 Effect of pH and NaCl on bacterial attachment to PDMAEMA modified SiNWAs. Data are the means of three independent experiments with bar as SE.

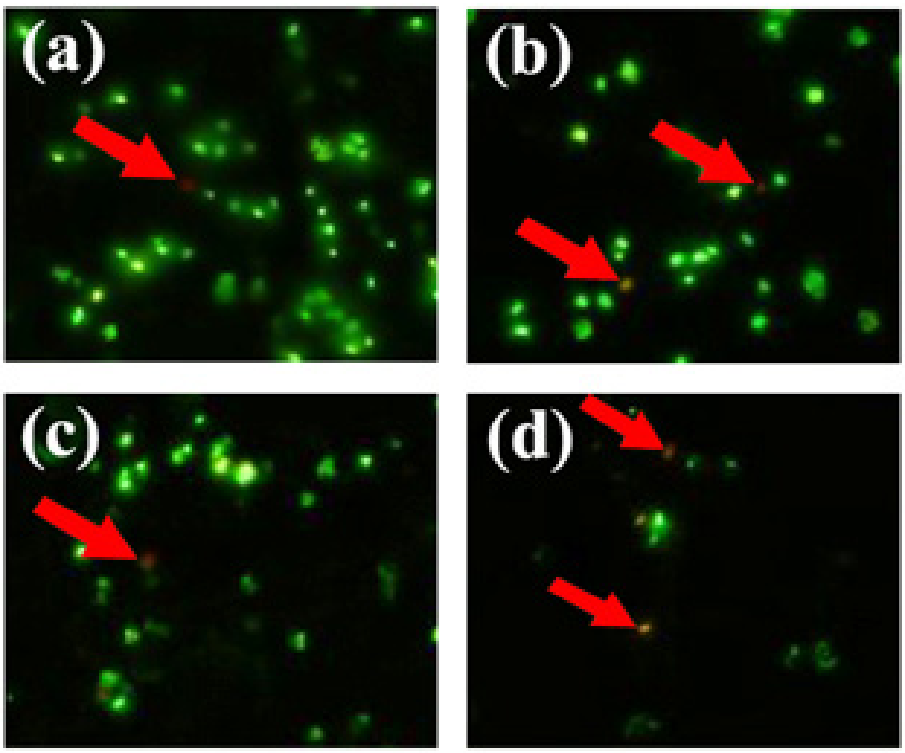

Fig. S10 Effect of NaCl on the viability of bacterial cells attached to PDMAEMA modified SiNWAs at pH 7.0. NaCl concentrations in a)-d) are 1 mM, 10 mM, 100 mM and 1000 mM, respectively. Live cells are shown in green fluorescence, and dead cells are in red (pointed by the arrows).

References

1 J. H. Bovaird, T. T. Ngo and H. M. Lenhoff, *Clin. Chem.,* 1982, **28**, 2423.

2 F. Zhou, L. Yuan, H. Wang, D. Li and H. Chen, *Langmuir*, 2011, **27**, 2155.

3 H. Wang, L. Wang, P. Zhang, L. Yuan, Q. Yu and H. Chen, *Colloid. Surf. B*, 2011, **83**, 355.