

Signal-off impedimetric immunosensor for the detection of

Escherichia coli O157:H7

Jingzhuan Wan¹, Junjie Ai¹, Yonghua Zhang¹, Xiaohui Geng¹, Qiang Gao^{1*}, Zhiliang Cheng^{2*}

¹Key Laboratory of Applied Surface and Colloid Chemistry, Ministry of Education, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an, 710062, China, ²Department of Bioengineering, University of Pennsylvania, Philadelphia, PA 19104, USA

Corresponding Author

*Qiang Gao

Tel: 86-29-81530726

Fax: 86-29-81530727

E-mail: gaoqiang@snnu.edu.cn

*Zhiliang Cheng

Tel: 215-573-0290

Fax: 215-573-2071

Email: zcheng@seas.upenn.edu

Methods

Preparation of complex AuNPs/bacteria

Bacteria medium (1 ml) containing different amounts of bacterial, 1×10^6 , 1×10^5 , 1×10^4 and 1×10^3 cfu, was centrifuged at 5000 rpm for 3 minutes, and then removed supernatant. Precipitation was washed with water for three times. The precipitation was then resuspended in water (1 mL). To form the complex AuNPs /bacteria, the resulting bacterial solution (50 μ L) was mixed with AuNPs solution (500 μ L, 8 nM) and incubated for 1 h, followed with centrifugation at 3000 rpm for 5 minutes. Precipitation was washed with phosphate buffer solution for three times and resuspended in water (1 mL). The resulting solution of the complex was used for TEM images.

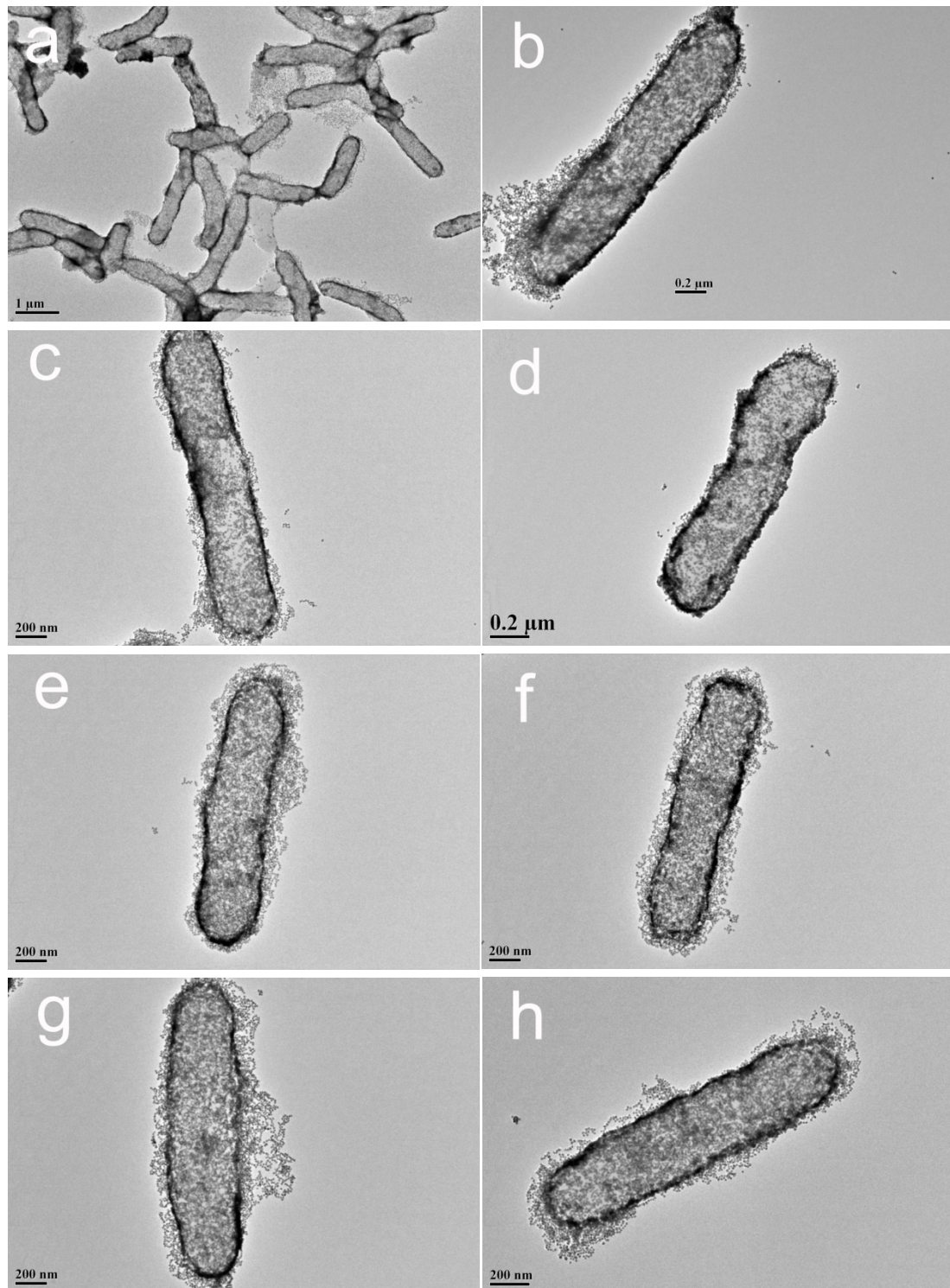


Figure S1 Transmission electron microscopy images of AuNPs/bacteria complex. The AuNPs/bacterial complex was prepared by incubation bacterail 1×10^6 (a&b), 1×10^5 (c&d), 1×10^4 , (e&f) or 1×10^3 cfu/mL (g&h) with excess AuNPs.

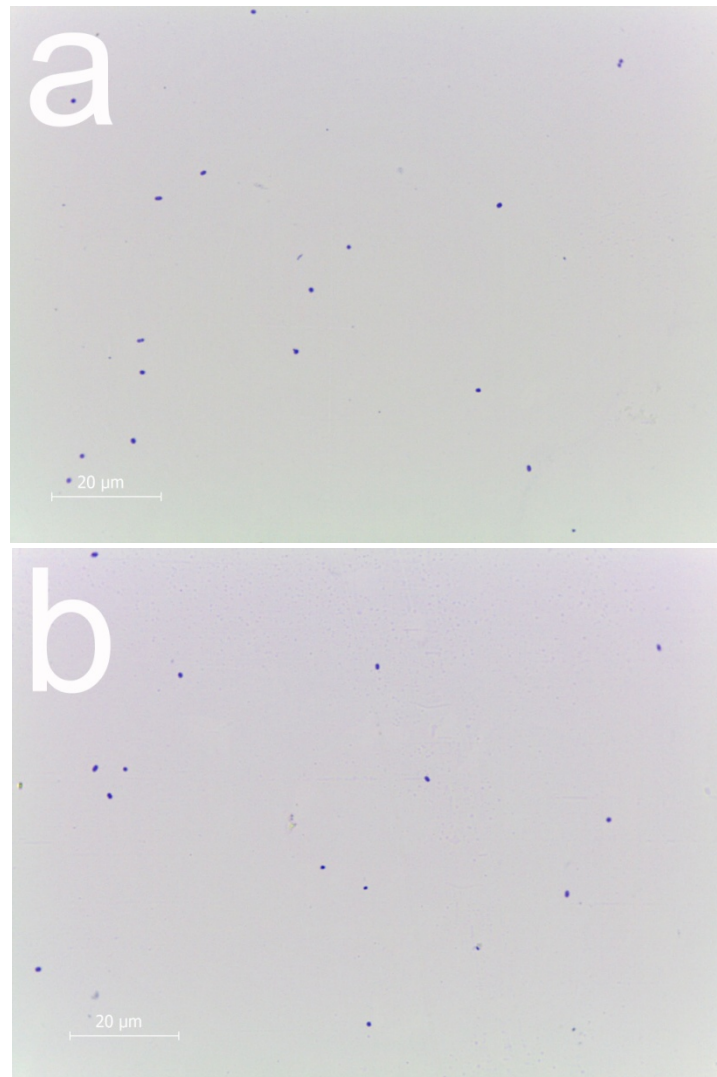


Figure S2 Optical microscope images of *E. coli* O157:H7 captured on the sensor surface before (a) and after (b) immersing in AuNPs solution. 1×10^6 cfu/mL bacterial sample was used to form bacterial-captured sensor surface. The bacterial was label with crystal violet before imaging.