Electronic Supplementary Material (ESI) for Analyst.

Label-free *E. coli* detection based on enzyme assay and microfluidic slipchip

Gaozhe Cai[1], Wenshuai Wu[2], Shilun Feng[2, 3,*], Yuanjie Liu[1,*],

[1]Key Laboratory of Agricultural Information Acquisition Technology, China Agricultural University, Beijing 100083, China

[2] School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore 639798

[3] State Key Laboratory of Transducer Technology, Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, Shanghai, 200050, China

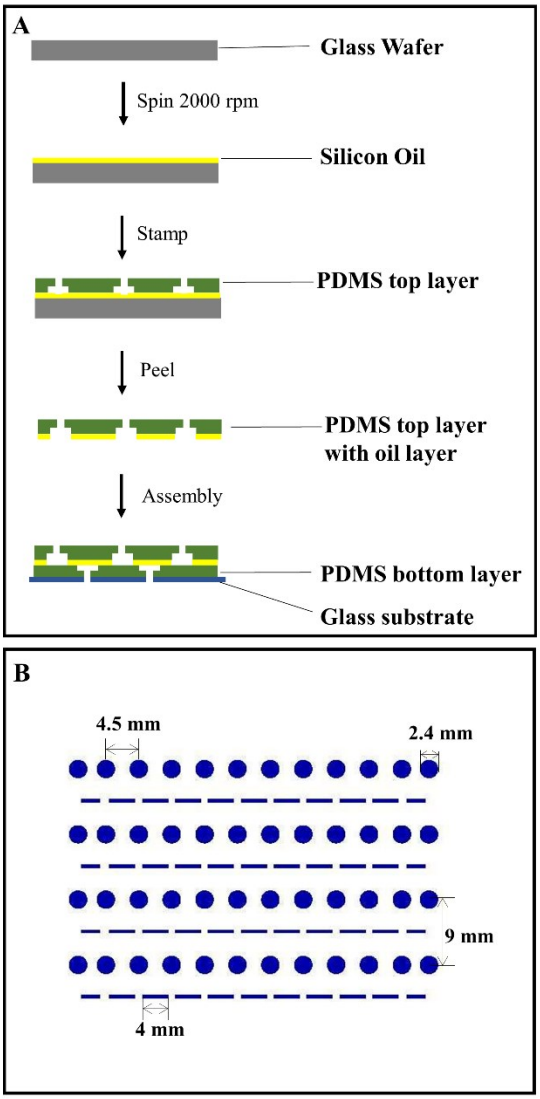

Figure S1. (A) Fabrication processing of microfluidic slipchip; (B) The detailed design of the microfluidic slipchip

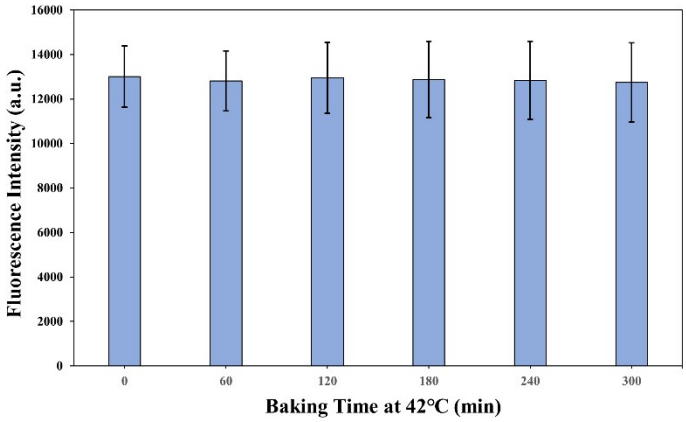

Figure S2. Anti-evaporation ability test of the microfluidic slipchip

Table S1 Comparison of this study with other conventional methods for detection of *Escherichia coli*

Analytical method	Detection time	Detection limit	Label method	Reference
Electrochemical	-	1.0×10^4 CFU/mL	antibody	[1]
Surface Plasmon Resonance	2 h	3.0×10^3 CFU/mL	antibody	[2]
Paper-based ELISA	3 h	1.0×10^4 CFU/mL	antibody	[3]
Conventional ELISA	1 h	1.0×10^5 CFU/mL	antibody	[4]
Conventional PCR	2 h	7.9×10^4 CFU/mL	dye	[5]
Our work	5 h	8 CFU/1.2 μL	label free	

Table S2 Fluorescence intensity of the chamber contained bacteria with different amounts

Amounts of *E. coli* in one chamber	Fluorescence Intensity (a.u.)	RSD
0 CFU	160.3	24.52%
4 CFU	184.1	10.35%
40 CFU	677.3	20.43%
400 CFU	23361	20.49%
4000 CFU	274344	21.69%
40000 CFU	394419	19.80%

Reference

1. S. M. Radke and E. C. Alocilja, Biosensors & bioelectronics, 2005, **20**, 1662-1667.

2. Y. Wang, Z. Ye, C. Si and Y. Ying, Sensors, 2011, **11**, 2728-2739.

3. B. Pang, C. Zhao, L. Li, X. Song, K. Xu, J. Wang, Y. Liu, K. Fu, H. Bao, D. Song, X. Meng, X. Qu, Z. Zhang and J. Li, Analytical Biochemistry, 2018, **542**, 58-62.

4. N. Karoonuthaisiri, R. Charlermroj, U. Uawisetwathana, P. Luxananil, K. Kirtikara and O. Gajanandana, Biosensors & bioelectronics, 2009, **24**, 1641-1648.

5. P. M. Fratamico, C. Debroy, T. Miyamoto and Y. Liu, Foodborne Pathogens & Disease, 2009, **6**, 605.