

Electronic Supplementary Information

Food-borne bacteria analysis using diatomite bioinspired SERS platform

Yikai Chen^{a,b#}, Binggang Ye^{a#}, Mengling Ning^{a,b}, Meng Li^b, Yixuan Pu^b, Zhiming Liu^b, Huiqing Zhong^{b*}, Chaofan Hu^{c*}, Zhouyi Guo^{b*}

^aHealthy Medical Engineering Technology Research Center, Guangdong Food and Drug Vocational College, Guangzhou 510520, PR China

^bMOE Key Laboratory of Laser Life Science & SATCM Third Grade Laboratory of Chinese Medicine and Photonics Technology, College of Biophotonics, South China Normal University, Guangzhou 510631, PR China

^cCollege of Materials and Energy, South China Agricultural University, Guangzhou 510642, PR China

[#]These authors contributed equally.

*Corresponding authors:

Prof. Zhou-Yi Guo (Z.Y. Guo)

E-mail: ann@scnu.edu.cn

Prof. Chao-fan Hu (C.F. Hu)

Email: thucf@scau.edu.cn

Prof. Hui-Qing Zhong (H.Q. Zhong)

E-mail: zhonghq@scnu.edu.cn

Table S1 Typical SERS Peaks of IR-780 on Dia-MPN-Au.

Raman shift (cm ⁻¹)	Concentration (mol/L)	Enhancement Factor
939	10 ⁻⁵	1.25×10 ³
	10 ⁻⁶	3.94×10 ³
	10 ⁻⁷	1.85×10 ⁴
	10 ⁻⁸	7.89×10 ⁴
	10 ⁻⁹	6.68×10 ⁵
	10 ⁻¹⁰	3.02×10 ⁶
	10 ⁻¹¹	1.18×10 ⁷
1208	10 ⁻⁵	1.47×10 ³
	10 ⁻⁶	3.79×10 ³
	10 ⁻⁷	2.10×10 ⁴
	10 ⁻⁸	9.94×10 ⁴
	10 ⁻⁹	5.45×10 ⁵
	10 ⁻¹⁰	1.50×10 ⁶
	10 ⁻¹¹	7.75×10 ⁶
1469	10 ⁻⁵	1.00×10 ³
	10 ⁻⁶	3.16×10 ³
	10 ⁻⁷	1.66×10 ⁴
	10 ⁻⁸	5.45×10 ⁴
	10 ⁻⁹	2.87×10 ⁵
	10 ⁻¹⁰	9.82×10 ⁵
	10 ⁻¹¹	4.26×10 ⁶

Table S2 Tentative assignments of the SERS bands of IR-780 induced by Dia-MPN-Au.

SERS Band (cm ⁻¹)	Band Assignment
717	Out-of-plane bending vibration of C-H
800	In plane bending vibration of C-H, C-C stretching vibration
939	Out-of-plane bending vibration of C-H
1122	C-C-N stretching vibration, ring bending vibration of C=C-H
1208	C=C stretching vibration
1370	-CH ₂ -twisting bending, C=C-H (C-H) bending vibration
1408	Scissoring vibration
1469	-CH ₂ - scissoring vibration
1529	C=C, C=N stretching vibration

Table S3 Typical SERS Peaks of MB on Dia-MPN-Au.

Raman shift (cm ⁻¹)	Concentration (mol/L)	Enhancement Factor
773	10 ⁻⁵	2.32×10 ³
	10 ⁻⁶	1.71×10 ⁴
	10 ⁻⁷	6.54×10 ⁴
	10 ⁻⁸	1.37×10 ⁵
	10 ⁻⁹	9.07×10 ⁵
1398	10 ⁻⁵	2.83×10 ³
	10 ⁻⁶	2.04×10 ⁴
	10 ⁻⁷	7.34×10 ⁴
	10 ⁻⁸	1.63×10 ⁵
	10 ⁻⁹	3.01×10 ⁵
1625	10 ⁻⁵	8.86×10 ²
	10 ⁻⁶	7.51×10 ³
	10 ⁻⁷	2.09×10 ⁴
	10 ⁻⁸	4.96×10 ⁴
	10 ⁻⁹	2.92×10 ⁵

Table S4 Tentative assignments of the SERS bands of MB induced by Dia-MPN-Au.

SERS Band/cm ⁻¹	Band Assignment
669	Out-of-plane bending of C-H
773	In-plane bending of C-H
885	In-plane bending of C-H
1041	In-plane bending of C-H
1185	Stretching of C-N
1398	Symmetrical stretching of C-N
1624	Ring stretching of C-C