

Supplementary Material

DNA tetrahedral-based dual-signal ratiometric electrochemical aptasensor for the detection of ochratoxin A in corn kernels samples

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Table of contents

Supplementary figures

Table S1	-----	3
Table S2	-----	3
Table S3	-----	3
Table S4	-----	4
Figure S1	-----	5
Figure S2	-----	6
Figure S3	-----	7
Figure S4	-----	8

Table S1 The DNA sequences used in experiment

Name	DNA sequences
Tetra-OTA	CAC CCA CAC CCG ATC TTTTTTTTTT ACA TTC CTA AGT CTG AAA CAT TAC AGC TTG CTA CAC GAG AAG AGC CGC CAT AGTA
Tetra-OTA 2	CAC CCA CAC CCG ATC TTTTTTTTTT-C ₆ -SH
Tetra-X	HS-C ₆ -TAT CAC CAG GCA GTT GAC AGT GTA GCA AGC TGT AAT AGA TGC GAG GGT CCA ATA C
Tetra-Y	HS-C ₆ -TCA ACT GCC TGG TGA TAA AAC GAC ACT ACG TGG GAA TCT ACT ATG GCG GCT CTT C
Tetra-Z	HS-C ₆ -TTC AGA CTT AGG AAT GTG CTT CCC ACG TAG TGT CGT TTG TAT TGG ACC CTC GCA T
OTA aptamer P1	GAT CGG GTG TGG GTG GCG TAA AGG GAG CAT CGG ACA T CGG GTG TGG GTG TTTTTTTTTT-biotin

Table S2 Comparison of response signal data of ratiometric and non-ratiometric sensors

	$I_{\text{UiO-66-SP}}$	$I_{\text{UiO-66-SP}}/I_{[\text{Fe}(\text{CN})_6]^{3-/4-}\text{-IR}}$	RSD (%)
Non-ratiometric probe	10.66 ^a ±0.45 ^b		43.85
Ratiometric probe		4.09 ^a ±0.11 ^b	3.71

(a) Average of 20 measurement results (b) Standard deviation

Table S3 Recovery and determination of OTA in red wine samples

Sample	Added (ng/mL)	Found (ng/mL)	RSD (%)	Recovery (%)
1	5.0	4.7236	6.51	94.5
		4.6620		93.2
		5.2403		104.8
2	0.5	0.5085	2.96	101.7
		0.5098		102.0
		0.5357		107.1
3	0.005	0.0053	6.52	106
		0.0048		96
		0.0047		94

Table S4 Comparison of detection of OTA in peanut and melon seeds samples with ELISA kit

Sample	Detention Method	OTA detected (ng/mL)	Average (ng/mL)	RSD (%)
Peanut	ELISA kit	0.51	0.51	2.99
		0.49		
		0.52		
Peanut	This work	0.58	0.57	4.64
		0.54		
		0.59		
Melon seeds	ELISA kit	1.24	1.26	3.00
		1.23		
		1.30		
Melon seeds	This work	1.34	1.32	1.52
		1.30		
		1.32		

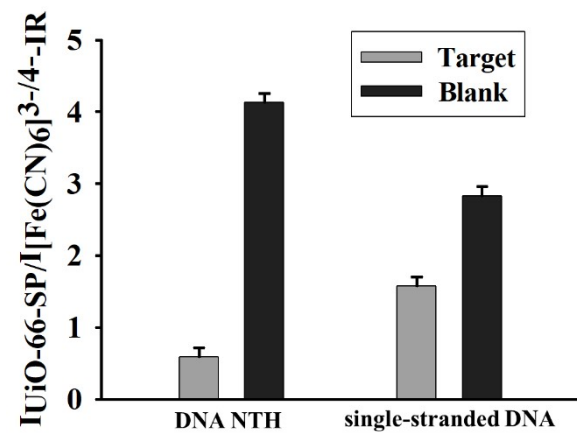


Fig. S1 Comparison of DNA NTH and single-stranded DNA sensors.

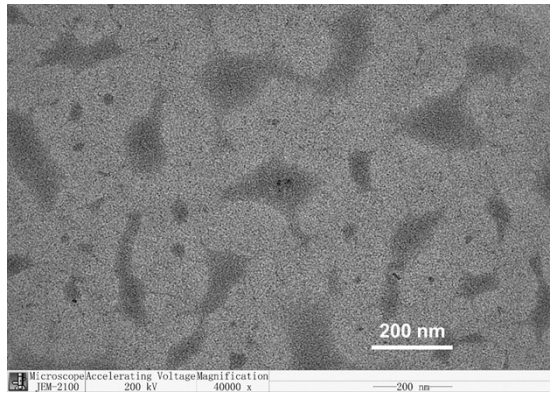


Fig. S2 TEM image of DNA NTH.

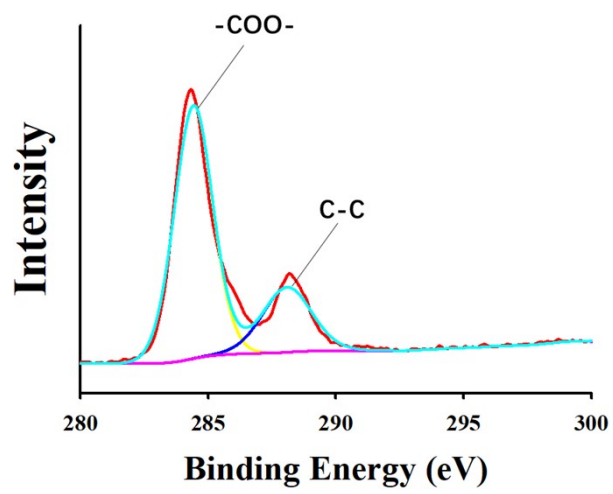


Fig. S3 The XPS of C 1s

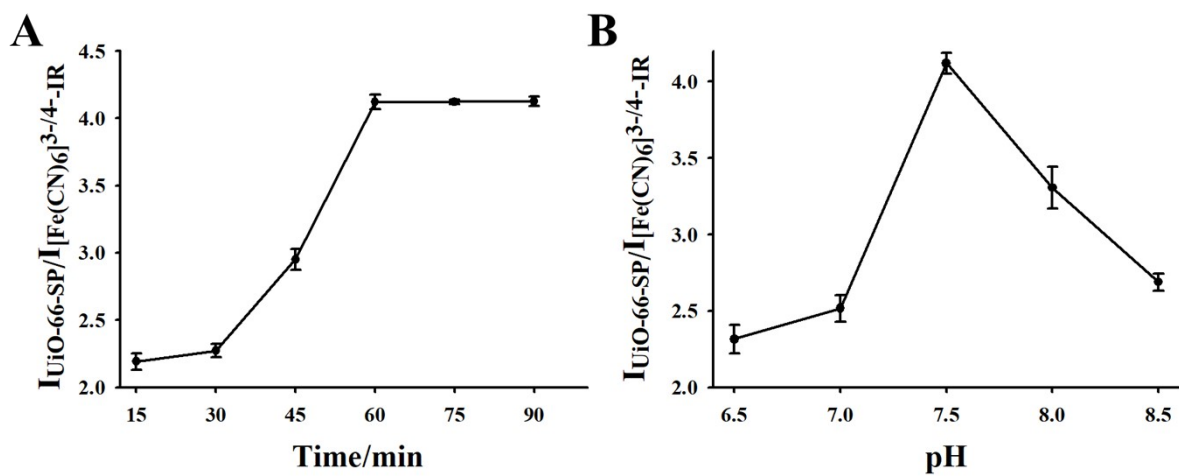


Fig. S4 The effect of (A) pH value of buffer and (B) incubation time of UiO-66-SP on the current response ratio.