gels

Supplementary Information

Stable DNA Aptamer–Metal Organic Framework as Horseradish Peroxidase Mimic for Ultra-Sensitive Detection of Carcinoembryonic Antigen in Serum

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Colloid stability study by detection performance record

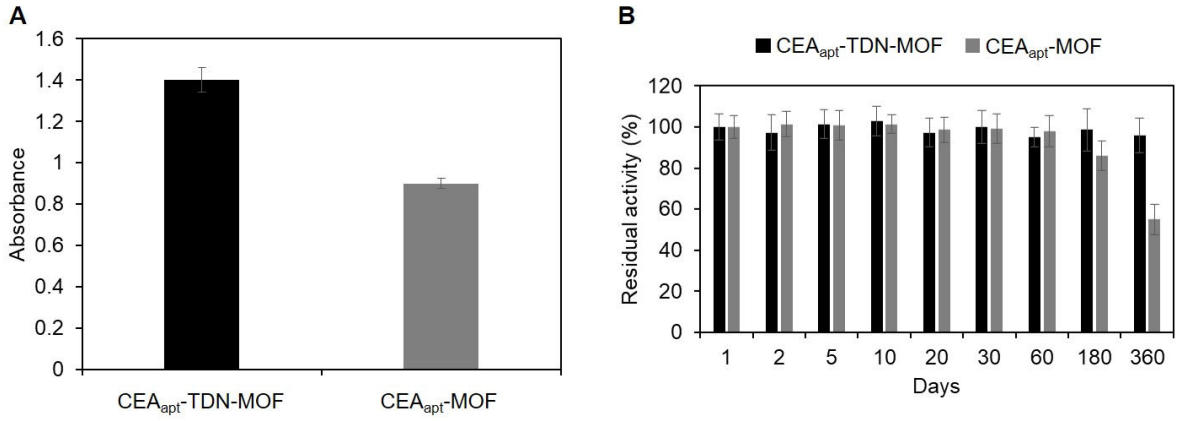


Figure S1. Detection performance of the CEA at 20 ng/mL by CEA$_{apt}$-TDN-MOFs or CEA$_{apt}$-MOFs at 25 μg/mL (A) and the record during one year (B). The experiment was performed three times.

Detection performance study at different pH

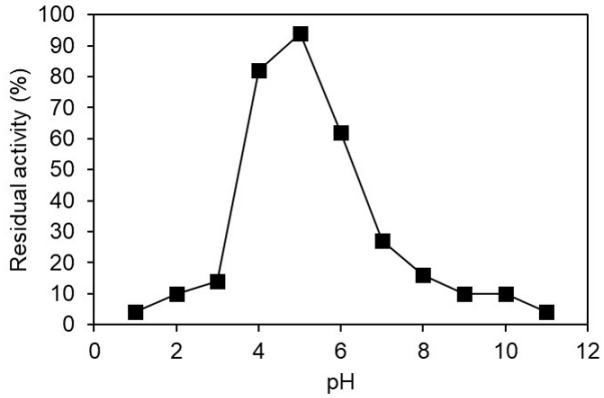


Figure S2. Detection performance of 25 μg/mL CEA_{apt}-TDN-MOFs toward 20 ng/mL CEA at pH ranging from 1 to 11. The experiment was performed twice to provide mean values as results.

Detection performance study at different pH

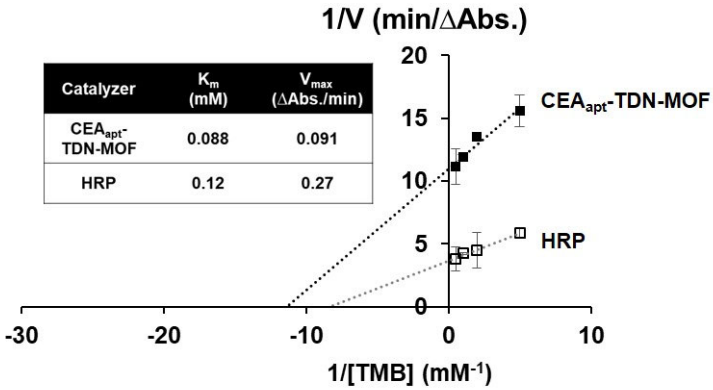


Figure S3. Lineweaver-Burk plot of catalytic activity in the presence of 5 nM CEA_{apt}-TDN-MOFs (■); 5 nM HRP (□). Insert table: K_m and V_{max} values obtained by analysis of Lineweaver-Burk plots.

CEA detection performance study using different sensors

Table S1. Comparison of CEA testing methods in the past five years.

Detection method	Limit of detection	Linear detection range	Reference
Photoelectric sensing	17.4 pg/mL.	0.04 – 60 ng/mL	[1, 2]
	32 pg/mL	0.1 – 300 ng/mL	
Fluorescence sensing	6.7 pg/mL	0.05 – 20 ng/mL	[3, 4]
	41 pg/mL	0.1 – 200 ng/mL	
Pressure sensing	167 pg/ml	0.5 – 60 ng/mL	[5, 6, 7, 8]
	87 pg/ml	0.1 – 40 ng/mL	
	130 pg/mL	0.2 – 60 ng/mL	
	150 ng/mL	0.2 – 80 ng/mL	
Colorimetric sensing	140 pg/mL	0.5 – 15 ng/mL	[9]
This work	**3.3 pg/mL**	**0.01 – 25 ng/mL**	

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