

Electronic Supplementary Information

Determination of trace gastrin and diagnosis of human diseases using the product of CdTe quantum dots labelling gastrin antibody as phosphorescence sensor

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Supporting Results

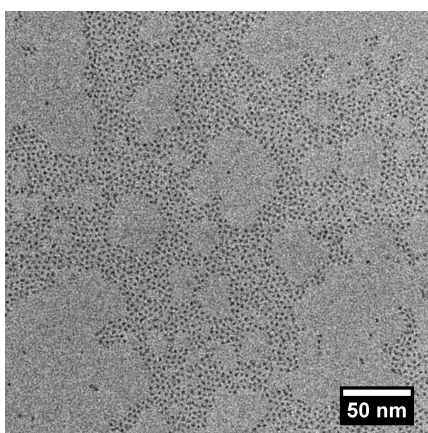


Fig. S1 TEM image of CdTe-QDs

Table S1 Basic parameters of instrument

Parameters of instrument		The ΔI_p of the Ab _{GAS} - GAS- Ab _{GAS} -CdTe- QDs system	The corresponding RSDs of ΔI_p of the system (%)	Optimum
Delay time (ms)	0.050, 0.10, 0.30,	17.9, 24.2, 16.3,	2.5, 2.1, 2.3,	0.10
	0.50, 0.70	12.9, 10.7	3.1, 3.5	
Gate time (ms)	1.0, 1.5, 2.0,	12.1, 16.5, 25.2,	3.3, 2.3, 2.0,	2.0
	2.5, 3.0	14.1, 9.8	3.0, 3.7	
Cycle time (ms)	10, 15, 20,	16.2, 20.6, 24.9,	2.5, 2.2, 2.0,	20
	25, 30	17.5, 14.0	2.4, 3.5	
Flash count	1, 2, 3,	24.3, 19.0, 16.7,	2.1, 2.3, 2.5,	1.0
	4, 5	12.6, 11.9	3.4, 3.5	

Table S2 Optimum measurement conditions (C and V are the concentration and volume of solutions, respectively.)

Condition	Variant	The ΔI_p of the system	The corresponding RSDs of ΔI_p of the system (%)	Optimum
$C_{\text{CdTe-QDs}}$ ($\mu\text{g mL}^{-1}$)	4.0, 4.5, 5.0, 5.5, 6.0	19.9, 22.2, 23.8, 22.5, 21.2	2.6, 2.3, 2.1, 2.4, 2.5	5.0
CdTe-QDs (mL)	1.00, 1.50, 2.00, 2.50, 3.00	19.4, 21.7, 24.3, 22.0, 20.7	2.9, 3.1, 2.0, 2.7, 2.8	2.00
C_{AbGAS} ($\mu\text{g mL}^{-1}$)	0.010, 0.050, 0.10, 0.25, 0.50	10.1, 16.7, 23.9, 17.3, 11.9	2.7, 2.5, 2.3, 2.6, 3.0	0.10
V_{AbGAS} (μL)	0.10, 0.20, 0.30, 0.40, 0.50	10.6, 13.3, 18.3, 23.5, 12.5	2.9, 2.7, 2.5, 2.3, 2.4	0.40
Sensitizer	Triton X-100, SDS, PEG, Tween-80, CTMAB	23.6, 15.4, 14.6, 11.4, 10.2	2.2, 2.6, 2.7, 2.8, 3.2	Triton X-100
$C_{\text{Triton X-100}}$ (%)	0.50, 1.0, 1.5, 2.0, 2.5	14.7, 18.5, 23.4, 19.3, 15.1	2.6, 2.4, 2.1, 2.4, 2.5	1.5
$V_{\text{Triton X-100}}$ (mL)	0.50, 0.75, 1.00, 1.50, 2.00	13.9, 17.6, 20.8, 23.9, 19.7	3.0, 2.8, 2.5, 2.2, 2.4	1.50
pH	4.30, 5.60, 7.40, 8.10, 9.10	13.6, 17.5, 23.2, 22.8, 15.5	3.1, 2.9, 2.3, 2.4, 2.6	7.40
Reaction time (min)	30, 50, 70, 90, 120	14.7, 19.4, 21.6, 23.5, 19.1	3.2, 2.9, 2.7, 2.3, 2.5	90
Reaction temperature ($^{\circ}\text{C}$)	4, 25, 30, 37, 40	11.8, 15.3, 20.5, 23.1, 18.4	3.5, 3.1, 3.0, 2.4, 3.3	37

Solid substrate	ACM, PAM, NCM	17.4, 9.5, 23.4	2.9, 3.4, 2.3	NCM
Ion perturber	Ag ⁺ , Pb ²⁺ , I ⁻ ,	17.9, 23.5, 18.2,	2.8, 2.2, 2.5,	Pb ²⁺
	Cu ²⁺	15.2	3.3	
C _{Pb²⁺} (mol L ⁻¹)	0.20, 0.40, 0.80,	14.0, 17.1, 21.4,	3.4, 2.9, 2.6,	1.00
	1.00, 1.20	23.6, 18.1	2.3, 3.0	
Time for passing N ₂ (min)	5, 10, 20,	23.5, 23.8, 23.6,	2.2, 2.5, 2.3,	10
	30, 40	23.5, 23.7	2.1, 2.5	
Time without passing N ₂ (min)	5, 10, 20,	21.4, 18.6, 15.1,	2.4, 3.0, 3.2,	
	30, 40	11.5, 8.4	3.5, 3.7	
Drying temperature (°C)	60, 70, 80,	14.7, 19.7, 21.4,	2.7, 2.4, 2.0,	90
	90, 95	24.4, 20.3	2.3, 2.4	
Drying time (min)	0.50, 1.0, 1.5,	14.9, 17, 20.3,	2.9, 2.6, 2.5,	2.0
	2.0, 2.5	23.5, 18.5	2.2, 2.4	
Standing time (min)	10, 20, 30,	22.9, 23.3, 23.5,	2.4, 2.1, 2.3,	10-40
	40, 50	23.7, 17.5	2.2, 2.5	