

Supplementary information for

Fluorescence-Based Colorimetric Droplet Platform Applied in the Biosensor for the Detection of α -Fetoprotein

Xia Xiang, Lu Chen, Cuiling Zhang, Ming Luo, Xinghu Ji, and Zhike He*
Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education), College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, P. R. China.

Tel: +86-27-6875-6557; fax: +86-27-6875-4067.

E-mail address: zhkhe@whu.edu.cn

Supplementary Figure S1

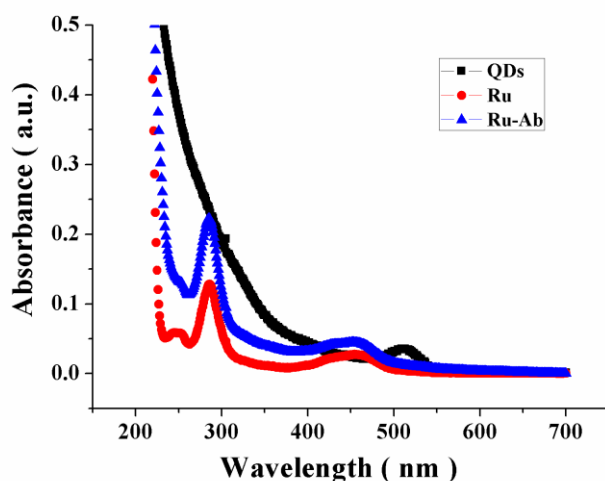


Fig. S1 UV-vis spectra of NAC-capped CdTe QDs, Ru and Ru-Ab. All solutions were prepared in

15 mM PBS buffer at pH 8.0.

Supplementary Figure S2

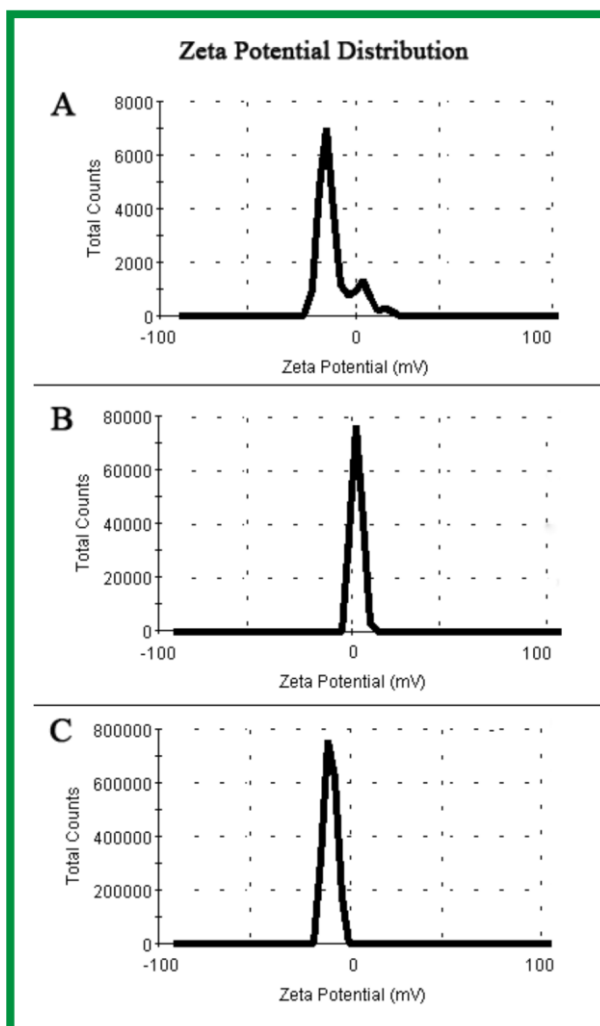


Fig. S2 The zeta potential of QDs, Ru-Ab and Ru-Ab-AFP from A to C. The concentrations of QDs, Ru-Ab and AFP were 3×10^{-8} M, 1.5 $\mu\text{g/ml}$ and 75 ng/ml, respectively.

Supplementary Figure S3

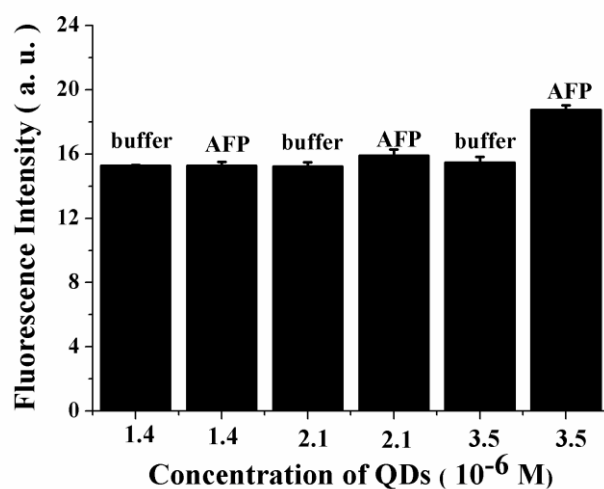


Fig. S3 The data of fluorescence recovery of QDs in the absence and presence of AFP under different QDs concentration. The concentrations of QDs were (A) 1.4×10^{-6} M, (B) 2.1×10^{-6} M, (C) 3.5×10^{-6} M. The concentrations of Ru-Ab and AFP were 0.3 mg/ml and $1 \mu\text{g/ml}$.

Supplementary Figure S4

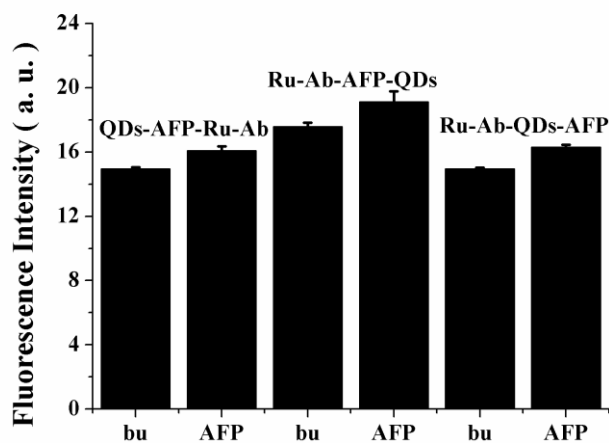


Fig. S4 The data of fluorescence recovery of QDs in the absence and presence of AFP under different mixing order. The concentrations of QDs, Ru-Ab and AFP were 3.5×10^{-6} M, 0.3 mg/ml

and 0.01 µg/ml. The VRs of QDs-Ru-Ab was 1:3.

Supplementary Figure S5

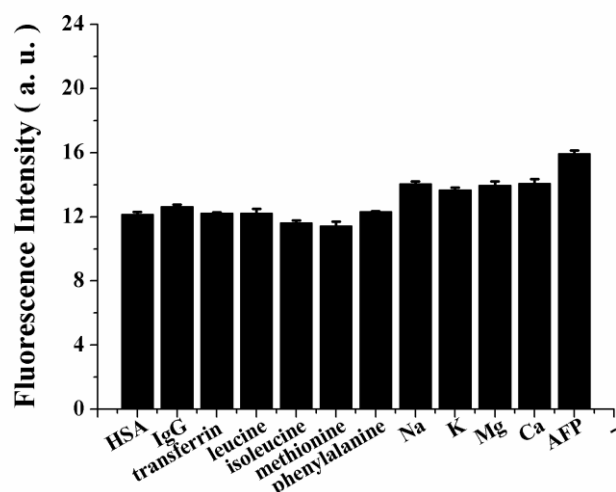


Fig. S5 Comparisons of the fluorescence recovery of QDs in the presence of diverse analytes and AFP. Other experimental conditions were the same as Fig. 8.

Table S1 Comparisons of the linear range, detection limit and detection time of several analytical methods for AFP.

References	Linear range (µg/L)	Detection limit (µg/L)	Detection time (min)	Detection scheme
Anal. Chem. 2006, 78, 1104-1106	————	11.7	150	Fluorescence Quenching
Anal. Chem. 2009, 81, 8230-8235	————	1	~ 9	Laser-Induced Fluorescence
Chem. Eur. J. 2009, 15, 4704-4709	0.1-5	0.01	~30	Chemiluminescence
J. Am. Chem. Soc. 2011, 133, 686-688	0.8-45	0.41	~10	PLNPs FRET Inhibition assay
Sens. Actuators, B. 2011, 156, 388-394	0.2-200	0.067	275	Electrochemical immunosensor

Anal. Chim. Acta. 2011, 686,115-120	5-70	2.5	60	Chemiluminescence resonance energy (CRET)
Acs Nano. 2010, 4, 488-494	0.0038-3800 (25fM-25nM)	0.038 (250fM)	1560	Microfluidic Protein Chip and QDs
Lab. Chip. 2010, 10, 3335-3340	0.1	_____	45	3-Dhydrogel pillars chip
Biosens. Bioelectron. 2008, 23, 1319-1325	_____	1	~54	Electrical detection in PDMS-glass microbiochip
Anal. Chim. Acta. 2009, 650, 77-82	0.001-0.5	0.001	1660	Microchip-based ELISA strategy, Chemiluminescence
Biomed.Microdevices. 2009, 11, 213-216	1-800	0.23	15.5	Chemiluminescence
Sens. Actuators, B. 2008, 128, 349-358	0.001-1	_____	20	Fluorescence
Lab. Chip. 2010, 10, 2527-2533	0.001	_____	_____	Capillary electrophoresis
Anal. Biochem, 2009, 388, 306-311	_____	0.1	~10	Electrophoresis
Electrophoresis 2008, 29, 3466-3476	0.001-0.1		55	Microchip-based multiplex electro-immunosensing colorimetric immunosensor in droplet
This method	0.5-1000	0.06	~4	