Electronic Supporting Information

A "turn-on" fluorescence sensor for ascorbic acid based on graphene quantum dots via fluorescence resonance energy transfer

Yue Gao [a]†, Xiaolu Yan [a]†, Meng Li [a], Han Gao [a], Jing Sun [b], Shuyun Zhu [a,b]*, Shuang Han, [c] Li-Na Jia [a], Xian-En Zhao [a,b]*, Hua Wang [a]*

[a`] Institute of Medicine and Materials Applied Technologies, College of Chemistry and Chemical Engineering, Qufu Normal University, Qufu City, Shandong Province, 273165, China.

E-mail: xianenzhao@163.com (X. Zhao); shuyunzhu1981@163.com (S. Zhu); huawangqfnu@126.com (H. Wang).

† The authors contributed equally to this work.

[b] Qinghai Key Laboratory of Qinghai-Tibet Plateau Biological Resources, Northwest nstitute of Plateau Biology, Chinese Academy of Sciences, Xining City, Qinghai Province, 810001, Qinghai, China.

[c] College of Applied Chemistry, Shenyang University of Chemical Technology, Shenyang 110142, China.

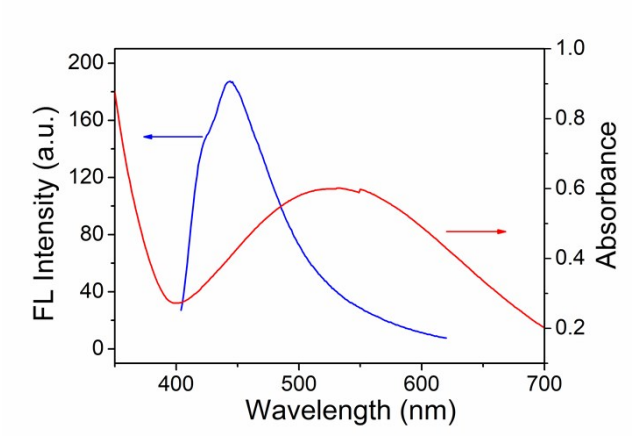

Fig. S1 Spectral overlap: absorption spectrum of the solution of 14.4 mM SQA and 480 μM $FeCl_3$ after incubation for 5 min in 10 mM PBS of pH 6.5 (red) and emission spectrum of 10 μg/mL GQDs in 10 mM PBS of pH 6.5 (blue).

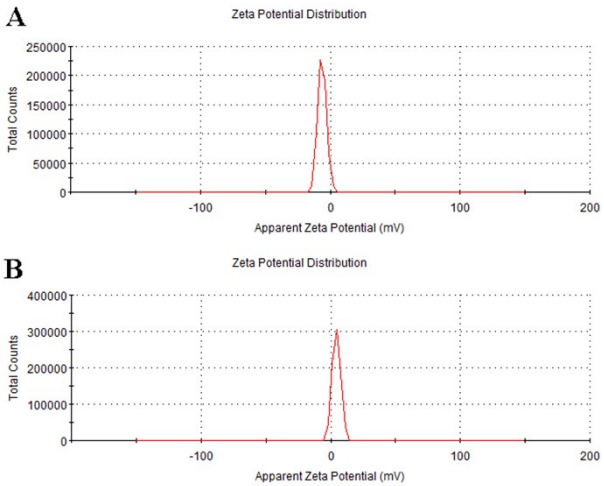

Fig. S2 Zeta potential of GQDs (A), and SQA-iron(Ⅲ) (B) in10 mM PBS of pH 6.5.

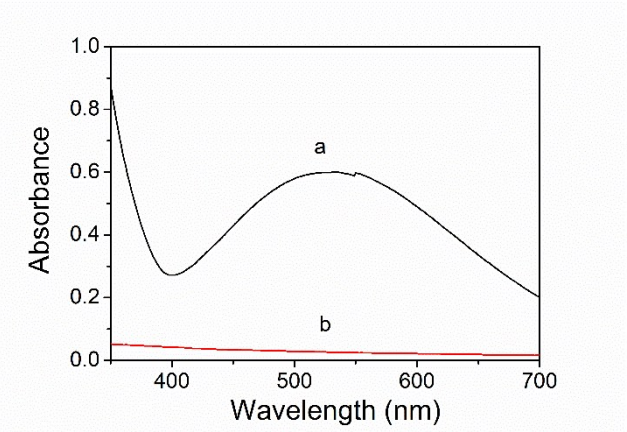

Fig. S3 Absorption spectrum of SQA-iron(III) (a) and SQA-iron(II) (b) in 10 mM PBS of pH 6.5. [SQA] = 14.4 mM; [$FeCl_3$] = 480 μM; [$FeCl_2$] = 480 μM

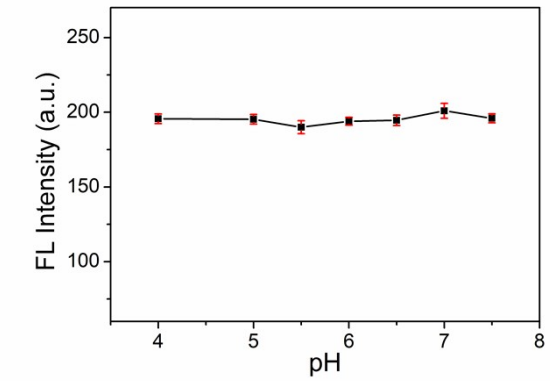

Fig. S4 The influence of pH on the fluorescence intensity of GQDs.

Table S1 Analytical results of AA in commercial fruit juices (n=5)

Sample	Amount (mg/100 mL)	Added (μM)	Detected (μM)	Recovery (%)	RSD (%)
orange juice	14.8	10.0	10.4	104	1.98
		40.0	38.68	96.7	2.65
peach juice	5.8	10.0	9.48	94.8	1.69
		40.0	37.5	93.75	3.45

Table S2 Analytical results of AA in vitamin C tablet (n=5)

Sample no.	Amount (μM)	Added (μM)	Detected (μM)	Recovery (%)	RSD (%)
1	5.0	2.0	1.96	98	2.32
2	5.0	5.0	4.89	97.8	1.69
3	5.0	25.0	23.8	95.2	3.11