Supplemental files

A portable smartphone-based detection of glyphosate based on inhibiting peroxidase-like activity of heptanoic acid and Prussian blue decorated Fe_3O_4 nanoparticles

Dan Chen [a,b], Chunqiong Wang [b], Dezhi Yang [c], Qiulan Li [c], Huimin Deng [d], Li Chen [e], Gaokun Zhao [f], Junli Shi [f], Yan Zhang [b], Ke Zhang [b,*], Yaling Yang [c,*]

[a] Peking University, School of Materials Science and Engineering, Beijing 100871, China.

[b] Yunnan Institute of Tobacco Quality Inspection & Supervision, Kunming 650500, China.

[c] Faculty of Life Science and Technology, Kunming University of Science and Technology, Kunming 650500, China.

[d] China National Tobacco Quality Supervision & Test Center, Zhengzhou 450001, China.

[e] Zhengzhou Tobacco Research Institute of CNTC, Zhengzhou, China.

[f] Yunnan Academy of Tobacco Agricultural Sciences, Kunming 650021, China

*Corresponding authors.

E-mail address: swukirk@126.com (K. Zhang); yangyl2016@qq.com (Y. Yang).

Tables:

Table S1 The precipitation efficiencies of glyphosate by co-precipitation method.

Samples	Spiked glyphosate ($\mu g\ mL^{-1}$)	Precipitation efficiencies (%)	RSD (%)
Tobacco 1	12.5	3.24	3.33
	50	3.11	2.14
Tobacco 2	12.5	2.47	4.12
	50	2.91	3.42
Water 1	12.5	1.87	4.38
	50	2.44	2.67
Water 2	12.5	2.64	2.87
	50	2.75	4.09

Table S2 Determination of glyphosate in spiked tobacco samples (n=6).

Tobacco samples	Spiked ($\mu g\ mL^{-1}$)	Smartphone color sensing platform			GC-MS		
		Detected ($\mu g\ mL^{-1}$)	Recovery (%)	RSD (%)	Detected ($\mu g\ mL^{-1}$)	Recovery (%)	RSD (%)
1	0	0	-	-	0	-	-
	12.5	11.18	89.44	3.53	11.65	93.2	3.23
	50	48.55	97.1	4.67	48.54	97.08	4.32
2	0	0	-	-	0	-	-
	12.5	11.57	92.56	1.89	11.64	93.12	2.65
	50	48.34	96.68	4.34	47.87	95.74	5.21
3	0	0	-	-	0	-	-
	12.5	11.83	94.64	5.38	11.03	88.24	3.59
	50	46.56	93.12	3.53	48.32	96.64	4.07

Figures:

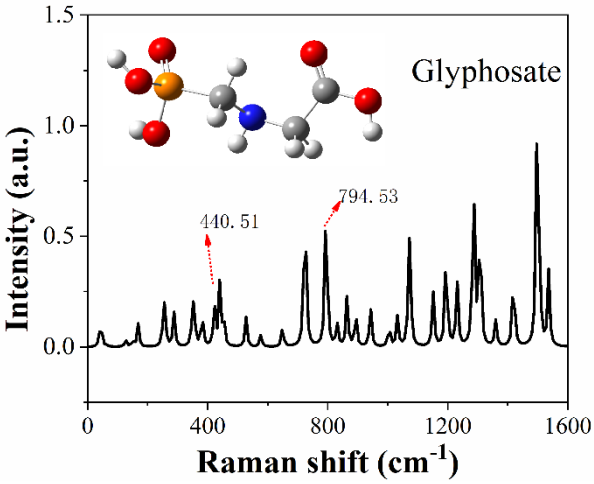
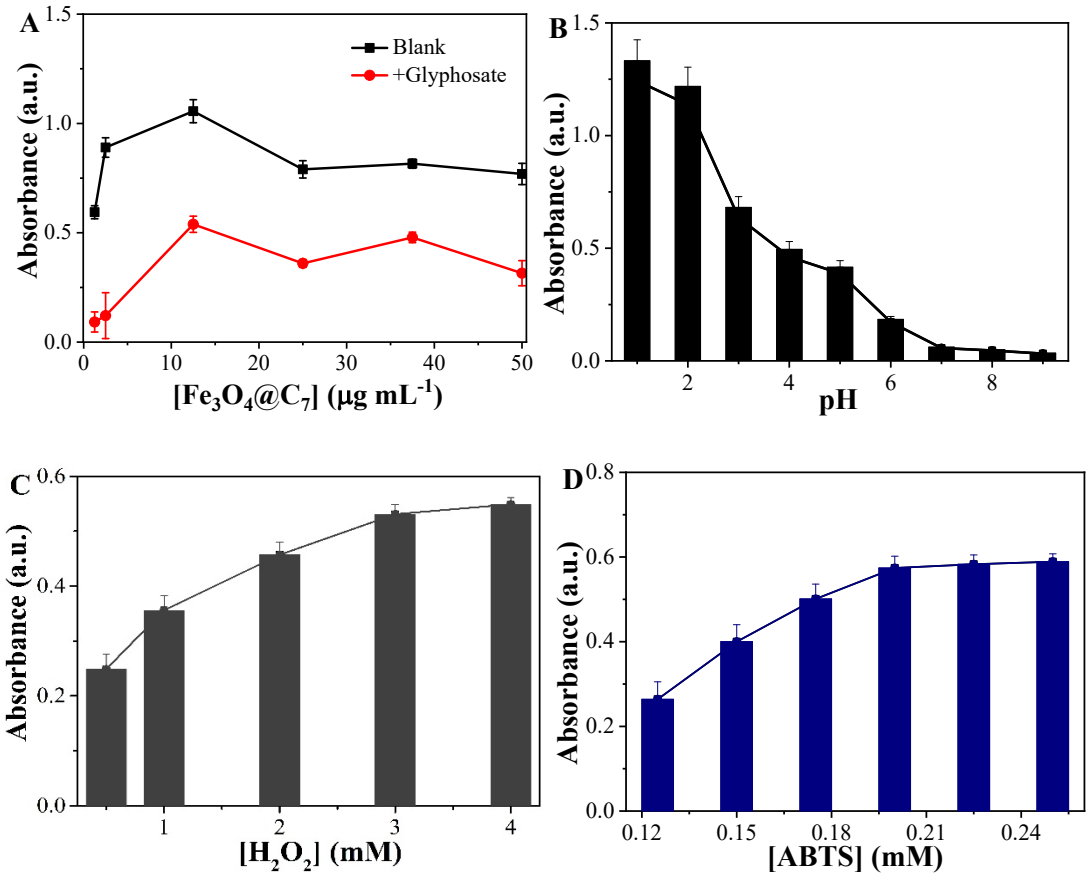


Fig. S1 The standard Raman spectra of glyphosate.



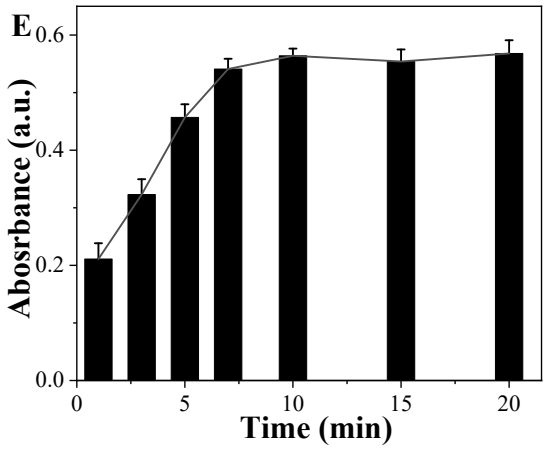


Fig. S2 Effect of the concentrations of $Fe_3O_4@C_7$ (A), pH (B) and substrate concentrations of H_2O_2 (C) and ABTS (D).