Electronic Supplementary Information

Enhanced fluorescence sensing based on boron affinity Fe$_3$O$_4$@SiO$_2$@PIL and its high selectivity and rapid detection of chlorogenic acid in fruit samples

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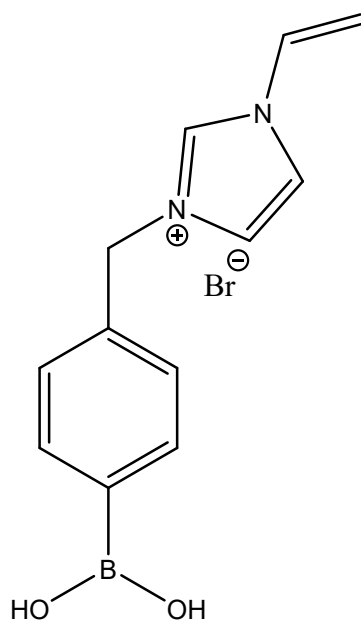[a]College of Biology and Chemical Engineering, Jiaxing University, Jiaxing 314001, China

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Compound **A**

Compound **A** {(3-(4-boronobenzyl)-1-vinyl-1H-imidazol-3-ium) bromide}. ^{1}H NMR (400 MHz, CD$_3$OD): δ = 5.43 (dd, J = 2.2, 8.8 Hz, 1H), 5.47 (s, 2H), 5.93 (dd, J = 2.4, 15.6 Hz, 1H), 7.20-7.30 (m, 1H), 7.43 (d, J = 7.2 Hz, 2H), 7.64-7.88 (m, 3H), 8.02 (s, 1H), 9.42 (s, 1H); ^{13}C NMR (100 MHz, CD$_3$OD): δ = 52.98, 108.66, 119.51, 119.55 (2C), 123.04 (2C), 127.42(2C), 128.38, 134.42, 135.19.
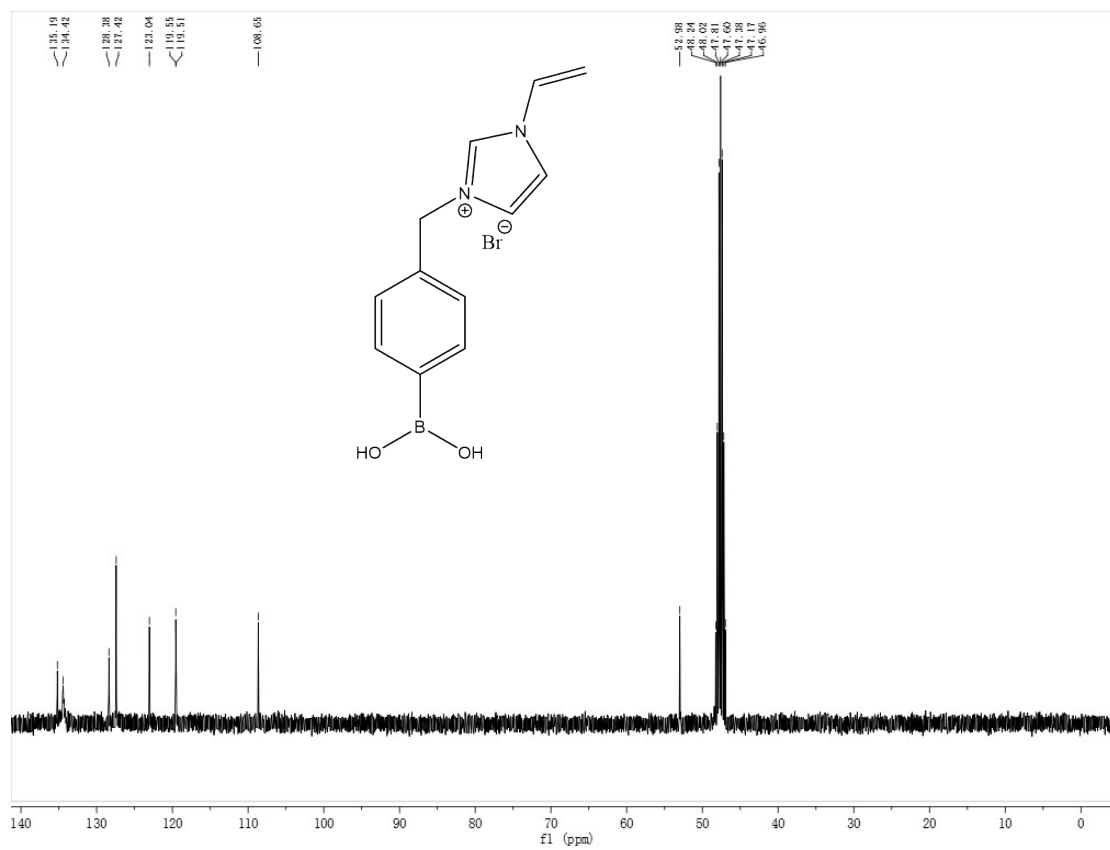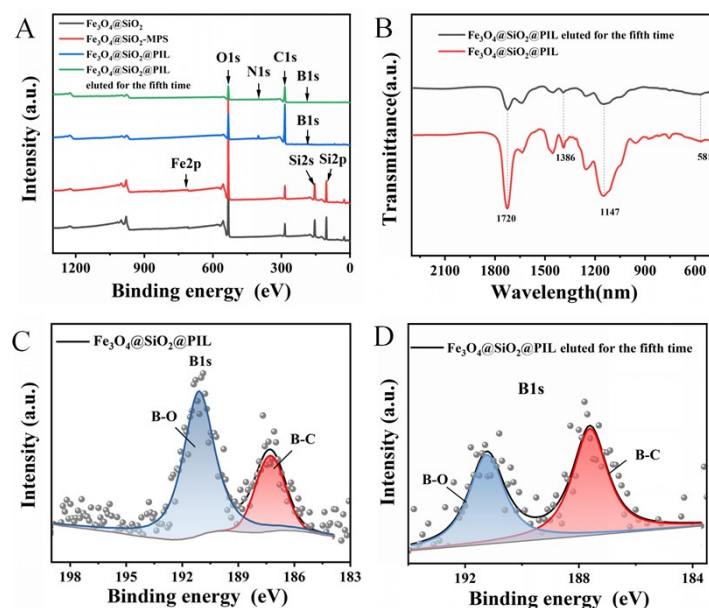
Fig.S1 ¹H NMR and ¹³C NMR spectra of Compound A

Fig.S2 (A) XPS analysis of several materials; (B) Infrared spectra of $Fe_3O_4@SiO_2@PIL$ and $Fe_3O_4@SiO_2@PIL$ eluted for fifth time; (C) High-resolution scan XPS spectra of B1s of $Fe_3O_4@SiO_2@PIL$ and (D) $Fe_3O_4@SiO_2@PIL$ eluted for the fifth time.

Table S1 Comparison $Fe_3O_4@SiO_2@PIL$ with other reported materials

Materials	Method	Detection limit	Linear range	Ref.
CDs	Fluorescence	46 nM	1.53-80.0 μmol L^{-1}	1
SiQDs	Fluorescence	0.43 μmol L^{-1}	10-150 μmol L^{-1}	2
N,S-CDs	Fluorescence	0.12 μg mL^{-1}	0.33-29.70 μg mL^{-1}	3
$SiO_2@Fe_3O_4@PDA$	Fluorescence	0.045 μmol L^{-1}	0.15-60 μmol L^{-1}	4
$Fe_3O_4@SiO_2@PIL$	Fluorescence	10 nM	0.025-2 μmol L^{-1}	This work

References

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