Supplementary Information

A Novel Fluorescent Probe Construction for Sensitive Determination of Glyphosate in Food and Imaging Living Cells

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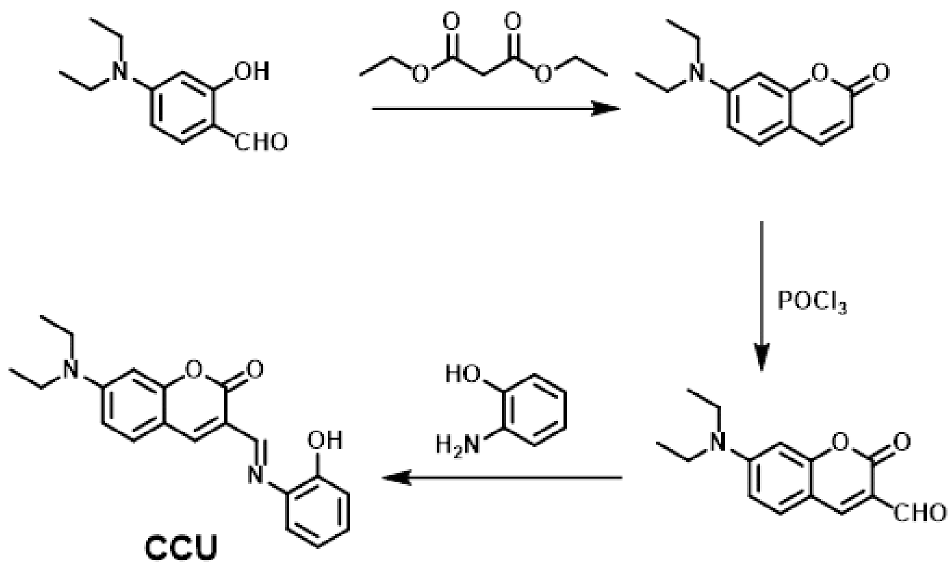
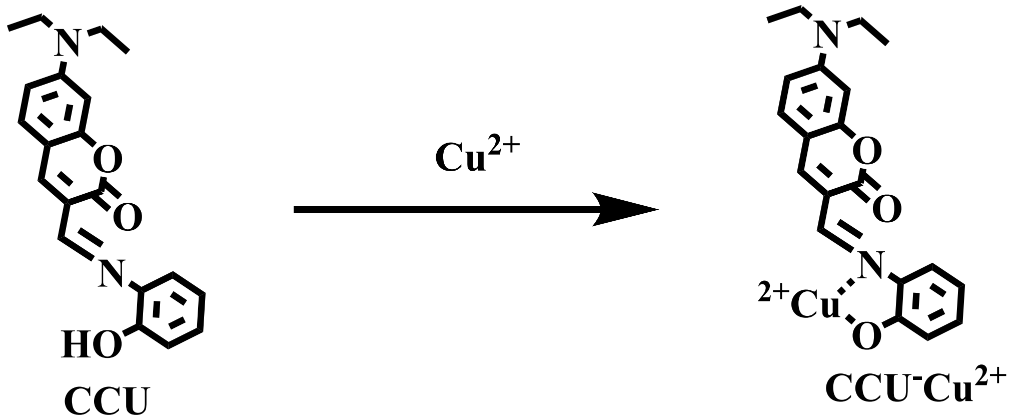
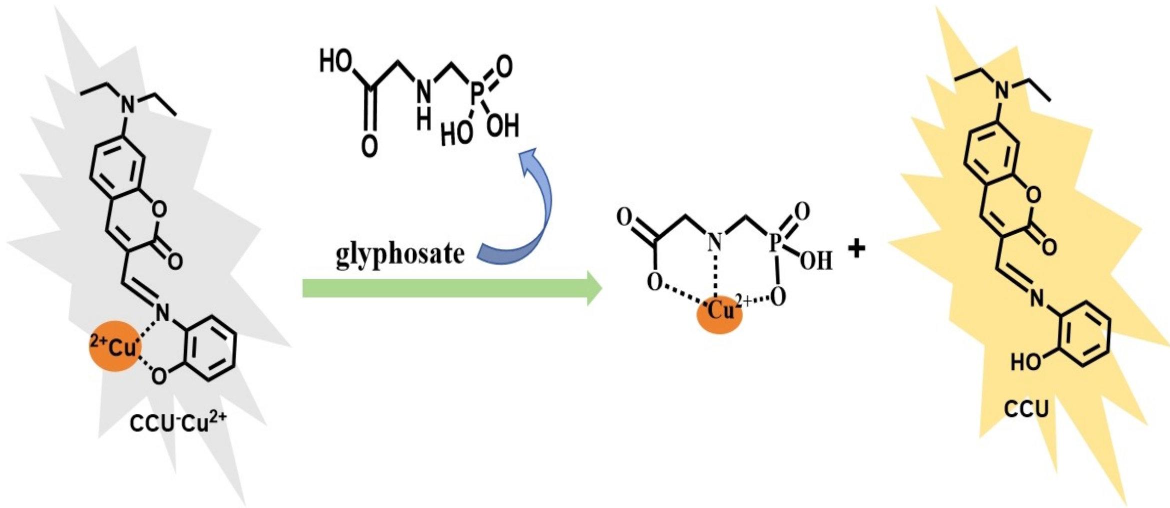


Scheme S1. The synthesis route of CCU



Scheme S2. Possible mechanism of CCU and Cu^{2+}



Scheme S3. Possible mechanism of CCU-Cu^{2+} and glyphosate

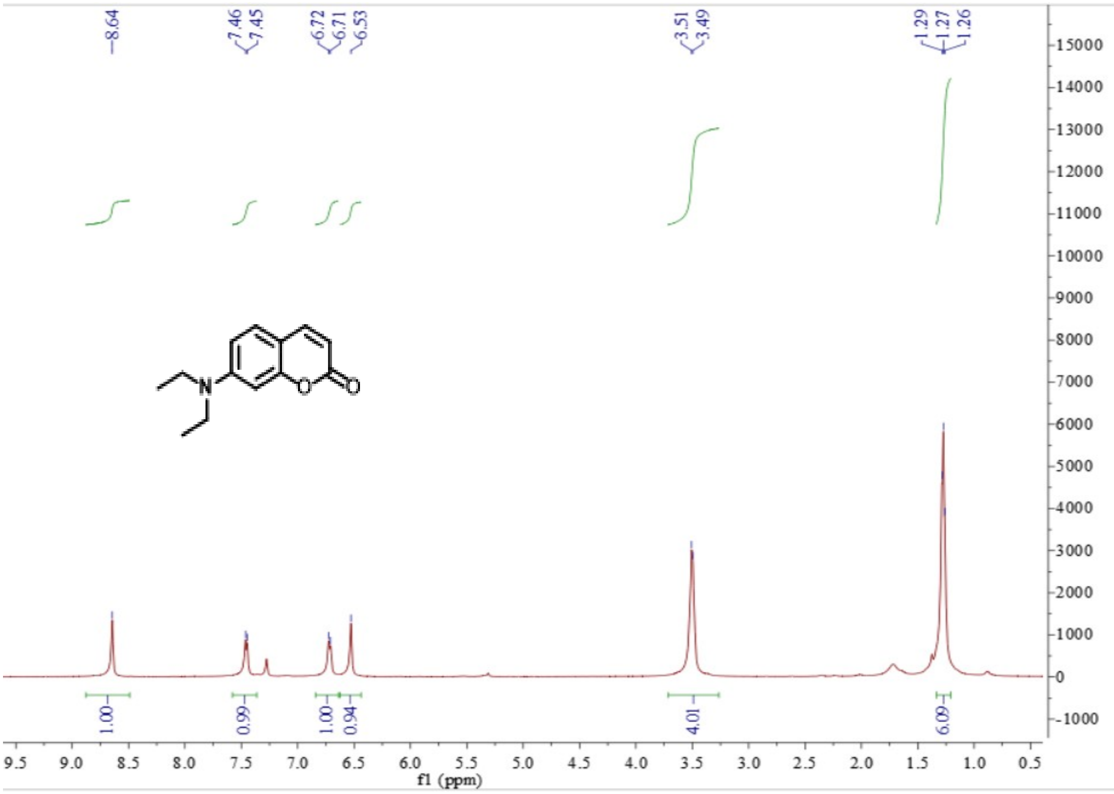


Fig.S1 ^{1}H NMR spectra of 7-(diethylamino)-2H-chromen-2-one

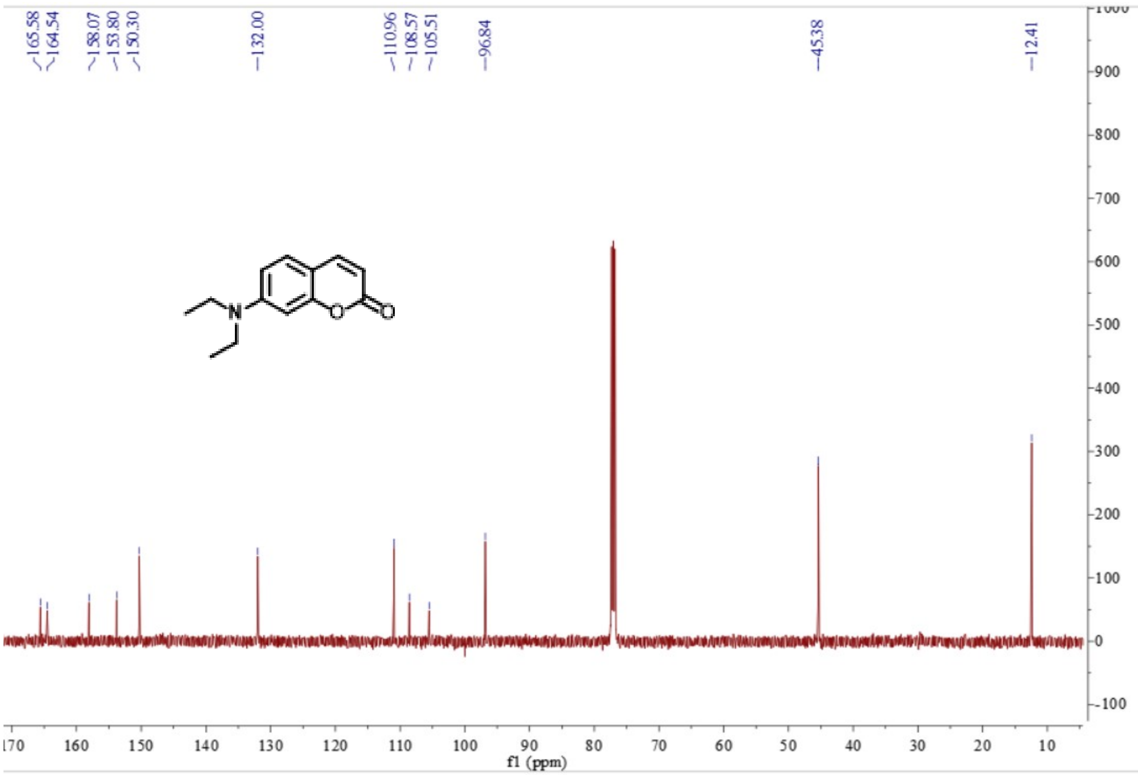


Fig.S2 ^{13}C NMR spectra of 7-(diethylamino)-2H-chromen-2-one

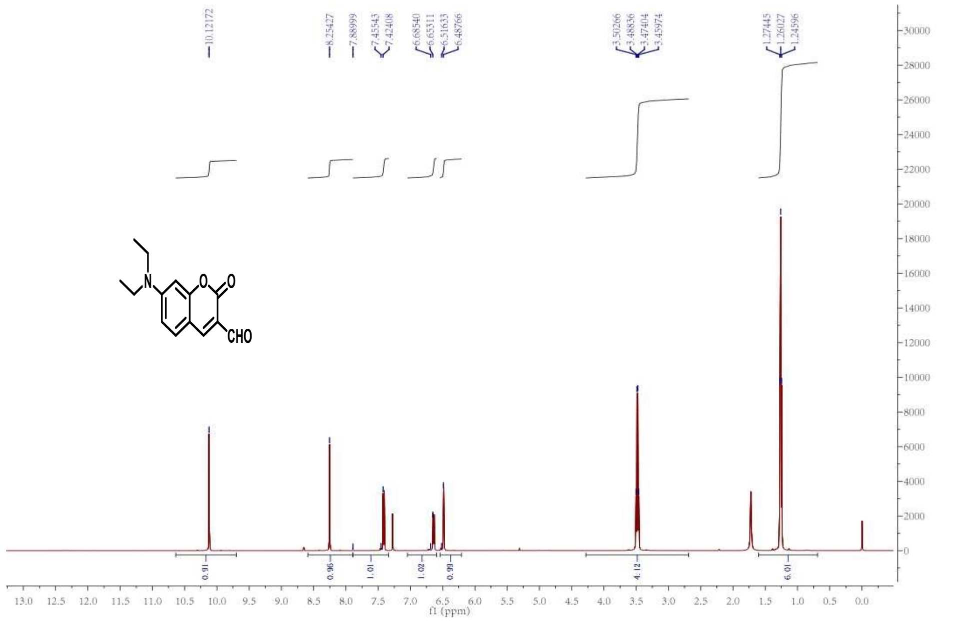


Fig. S3 ^{1}H NMR spectra of 7(diethylamino)-coumarin-3-carbaldehyde

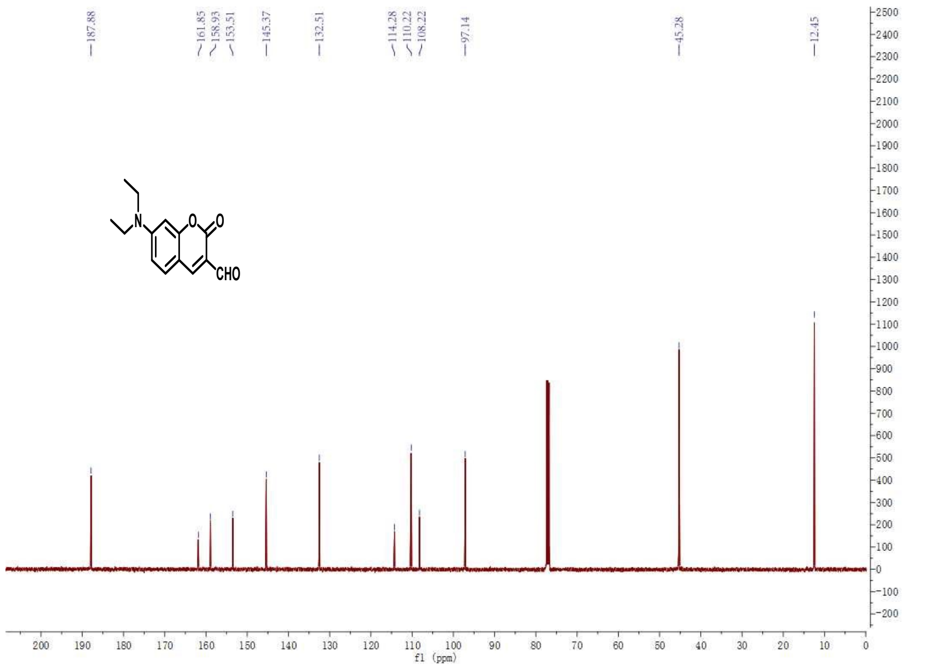


Fig. S4 ^{13}C NMR spectra of 7(diethylamino)-coumarin-3-carbaldehyde

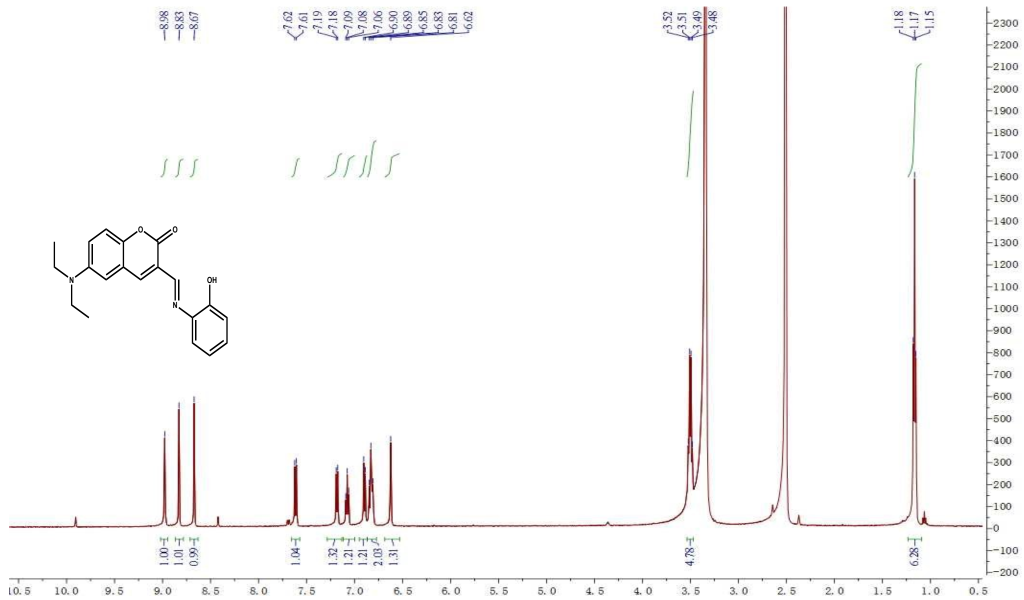


Fig. S5 ^{1}H NMR spectra of CCU

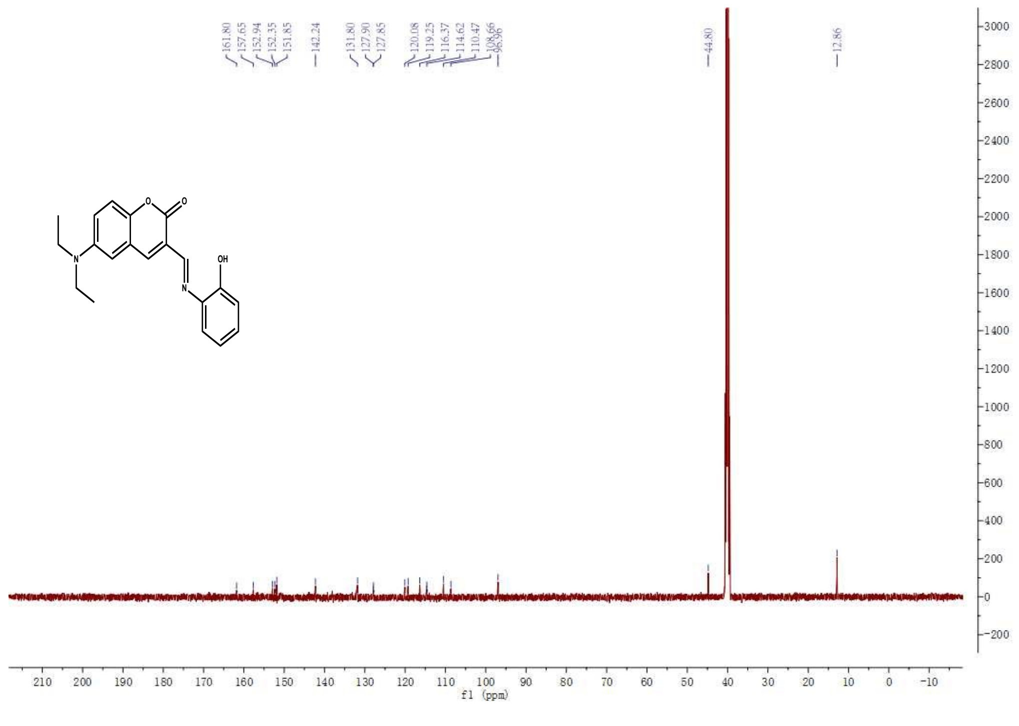


Fig. S6 ^{13}C NMR spectra of CCU

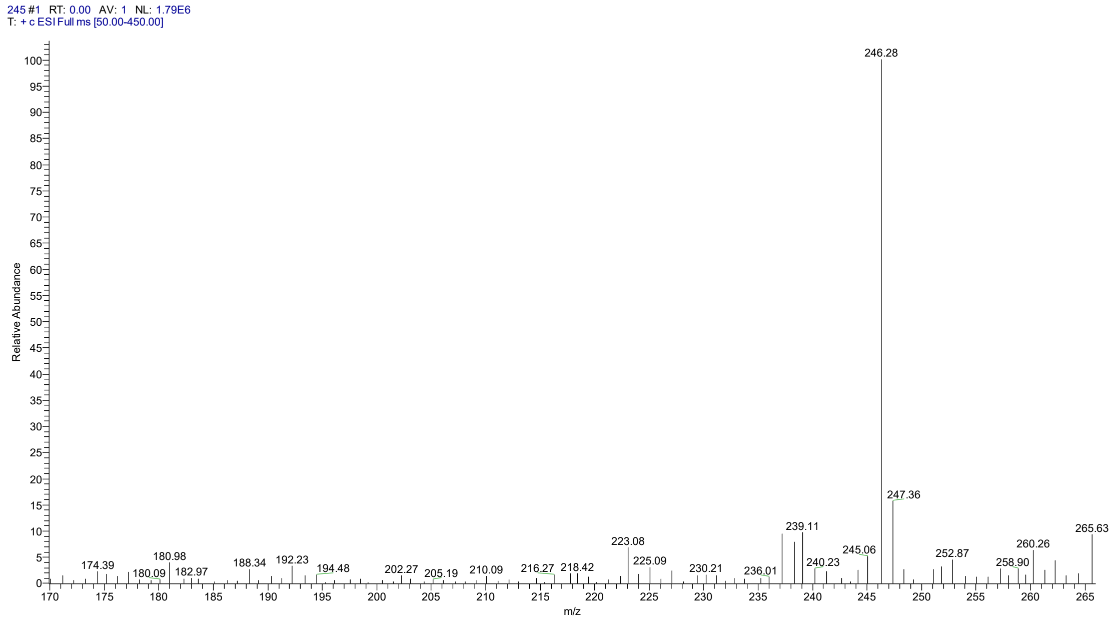


Fig. S7 ESI-MS spectrum of 7(diethylamino)-coumarin-3-carbaldehyde.

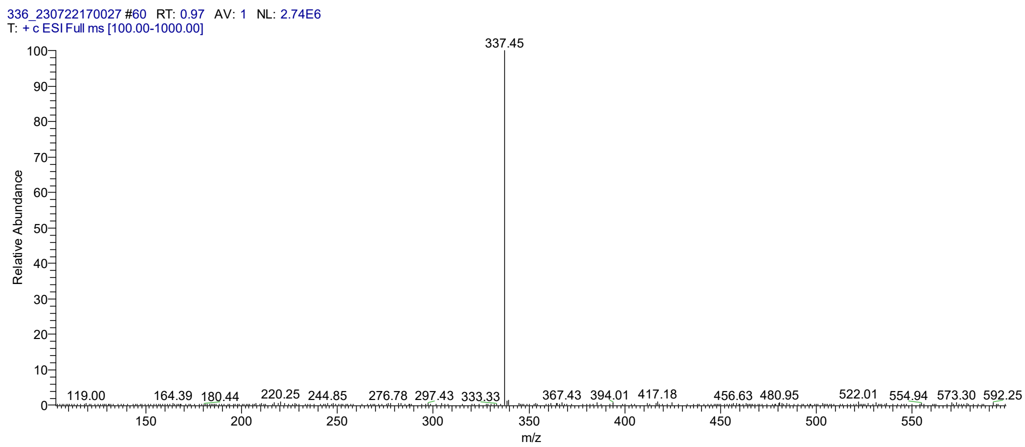


Fig. S8 ESI-MS spectrum of CCU

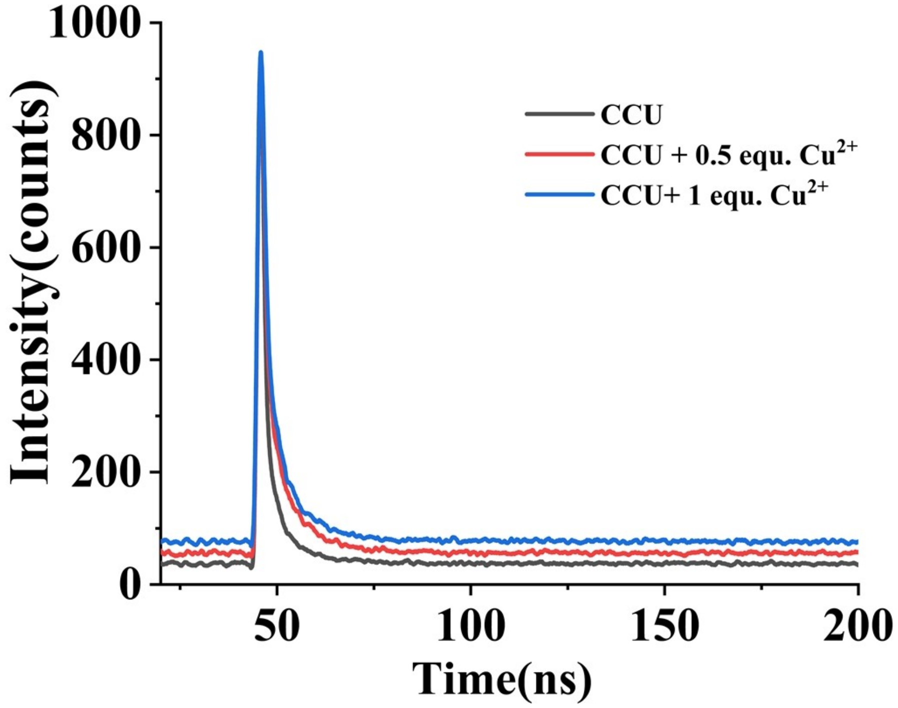


Fig.S9 Fluorescence lifetime of CCU (10 μM) with Cu^{2+} (0−1 equiv)

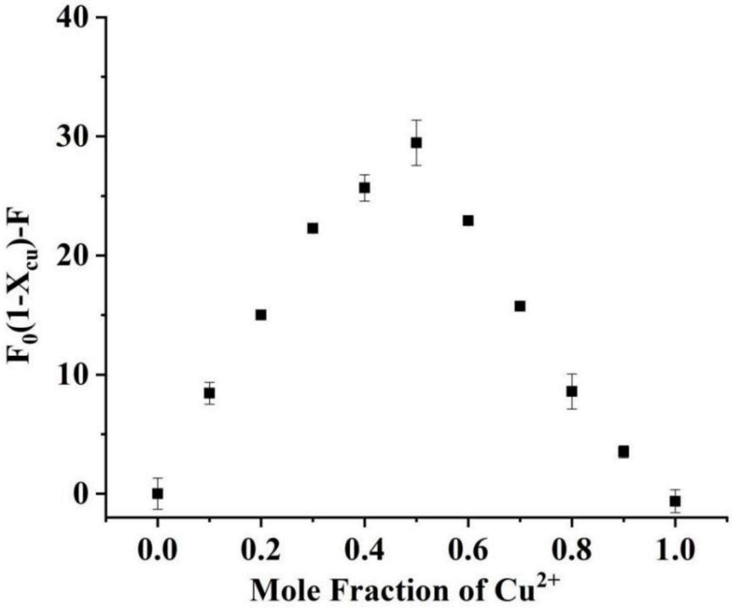


Fig. S10 Job's plot for CCU and Cu^{2+} (The total concentration of CCU and Cu^{2+} is 10 μM, λ_{em}= 500 nm).

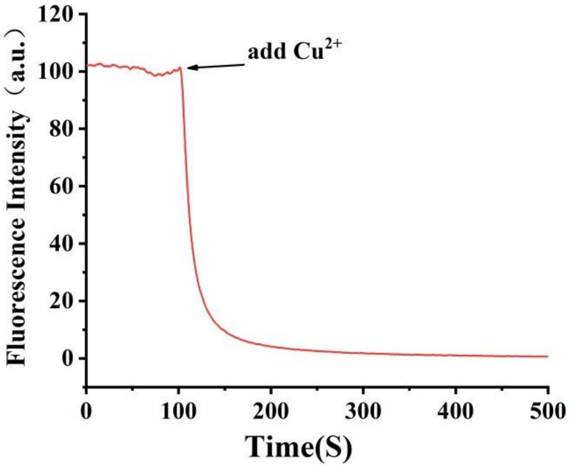


Figure S11 Real-time fluorescence responses of CCU (10 μM) to Cu^{2+}(100 μM) in PBS (10% DMSO, λ_{em}= 500 nm)

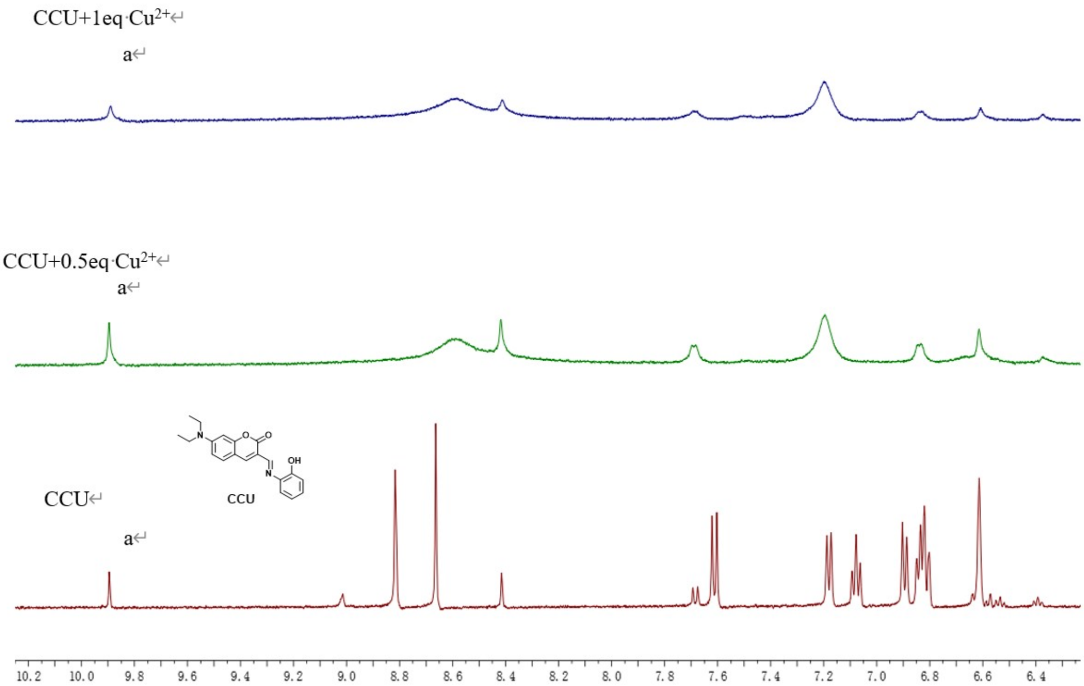


Figure S12 ^1H NMR titration plots of CCU with Cu^{2+} (a: OH).

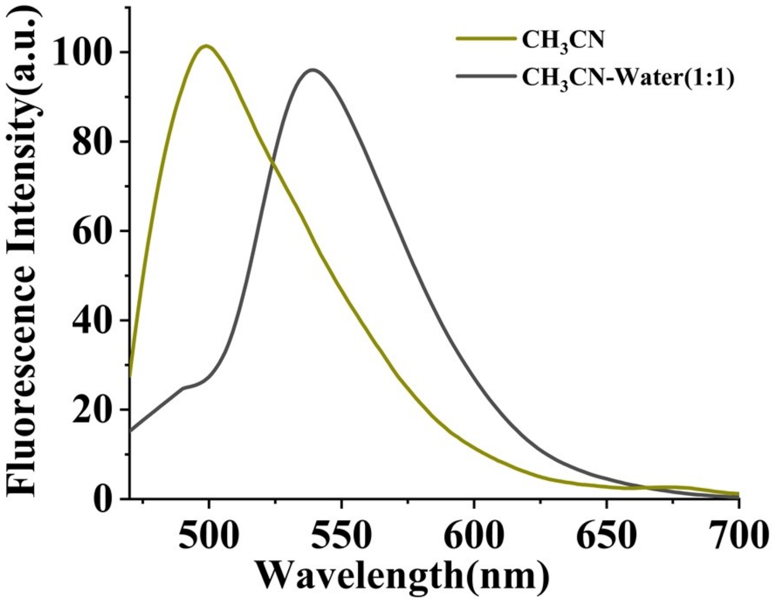


Fig. S13 The fluorescence intensity of CCU in acetonitrile (CH_3CN) or CH_3CN-Watar (1:1).

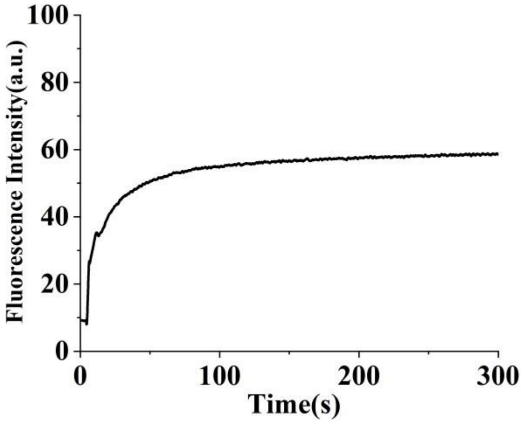


Fig.14 Real-time fluorescence responses of CCU (10 μM) to glyphosate (50 μM) in PBS (10% DMSO, λ_{em}= 500 nm).

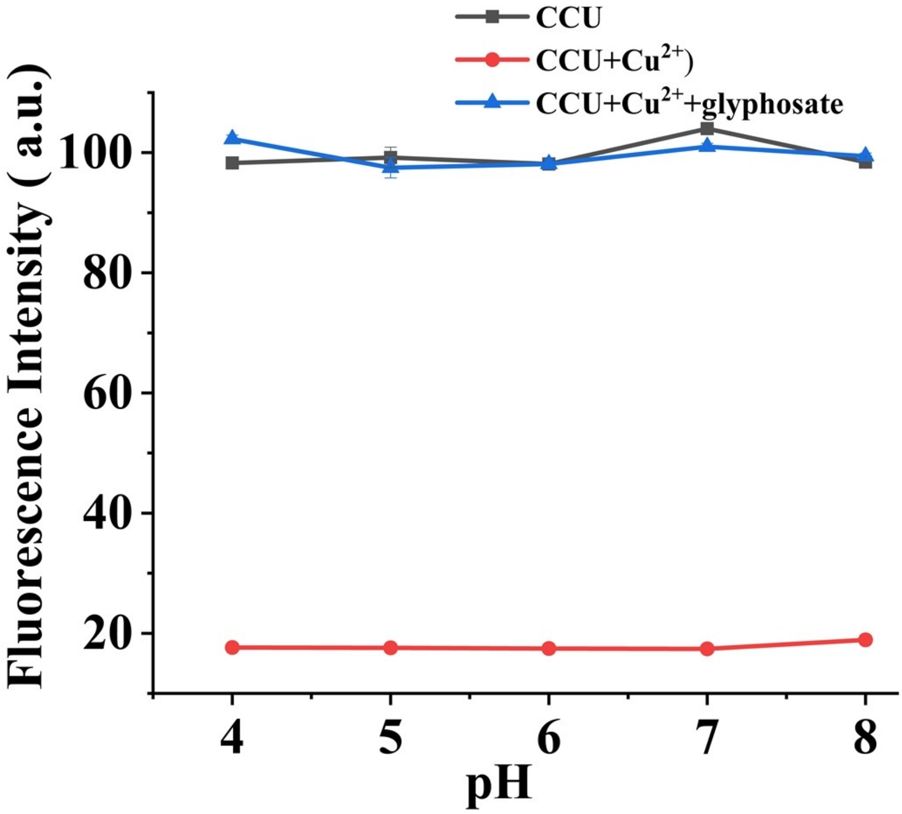


Fig. S15 Fluorescence intensity at 500 nm for CCU with or without Cu^{2+} or glyphosate in buffers with different pH values.

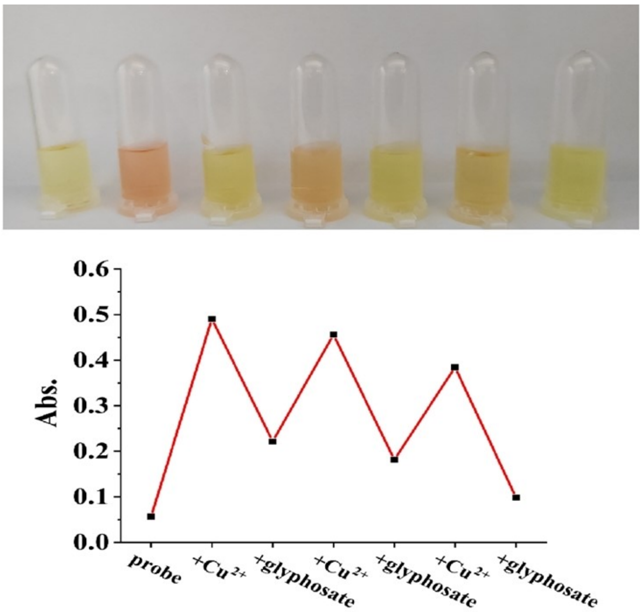


Fig.16 Reversible interaction between CCU with Cu2+ and glyphosate （λabs=500 nm).

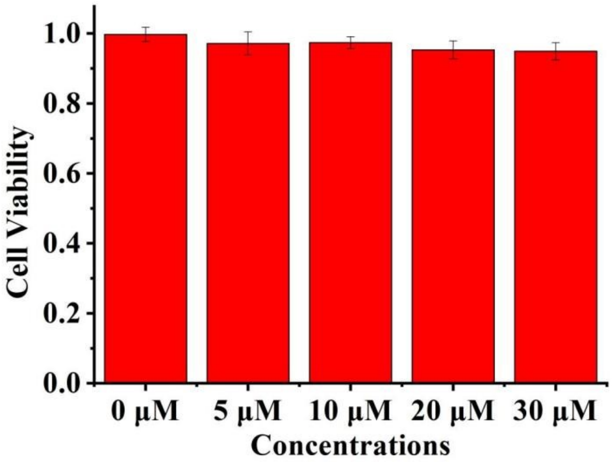


Figure S17 Cell viability assay for CCU as measured by WST-8 assay.

Table S1 Summary of glyphosate fluorescent probes reported in the last three years

Names/Material	**Response time**	**Test Condition**	**Applications**	**Ref**
NPA-Cu^{2+}	300 s	CH_3CN solution	Real samples	Int. J. Mol. Sci., **2021**, 22, 9816.
R-G	120 s	H_2O/CH_3OH (20% or puriffed water)	Real samples	Talanta, 224, **2021**, 121834.
BHMH-Fe^{3+}	/	DMSO/HEPES (25%, pH=6.0)	Real samples and cells imaging	J. Agric. Food Chem. **2021**, 69, 12661-12673.
PHQCA-Cu^{2+}	/	Deionized water	Real samples	Food Chem., 447, **2024** 138859.
PHA-Cu^{2+}	/	DMSO/H_2O (10%)	Cells imaging	Spectrochim. Acta. A Mol. Biomol. Spectrosc., 304, **2024**, 123291
F-0	1800 s	PBS (7.2-7.4)	Real samples	Anal. Methods, **2024**, 16, 1341–1346
PDHN-Cu^{2+}	60 s	Buffer pH=7.0	Real samples	Food Chem., 448, **2024**, 139021
QL	/	DMSO	Real samples	Spectrochim. Acta. A Mol. Biomol. Spectrosc., 303, **2023**, 123221
1•Cu^{2+}	/	THF–Water (50%)	Real samples and cells imaging	New J. Chem., **2022**, 46, 8105–8111
CCU-Cu^{2+}	50 s	PBS(pH=7.4, DMSO, 10%)	Real samples, smartphones and cells imaging	**This work**