Supporting information

The Screening of Drug-induced Nephrotoxicity Using Gold Nanocluster-based Ratiometric Fluorescent Probes

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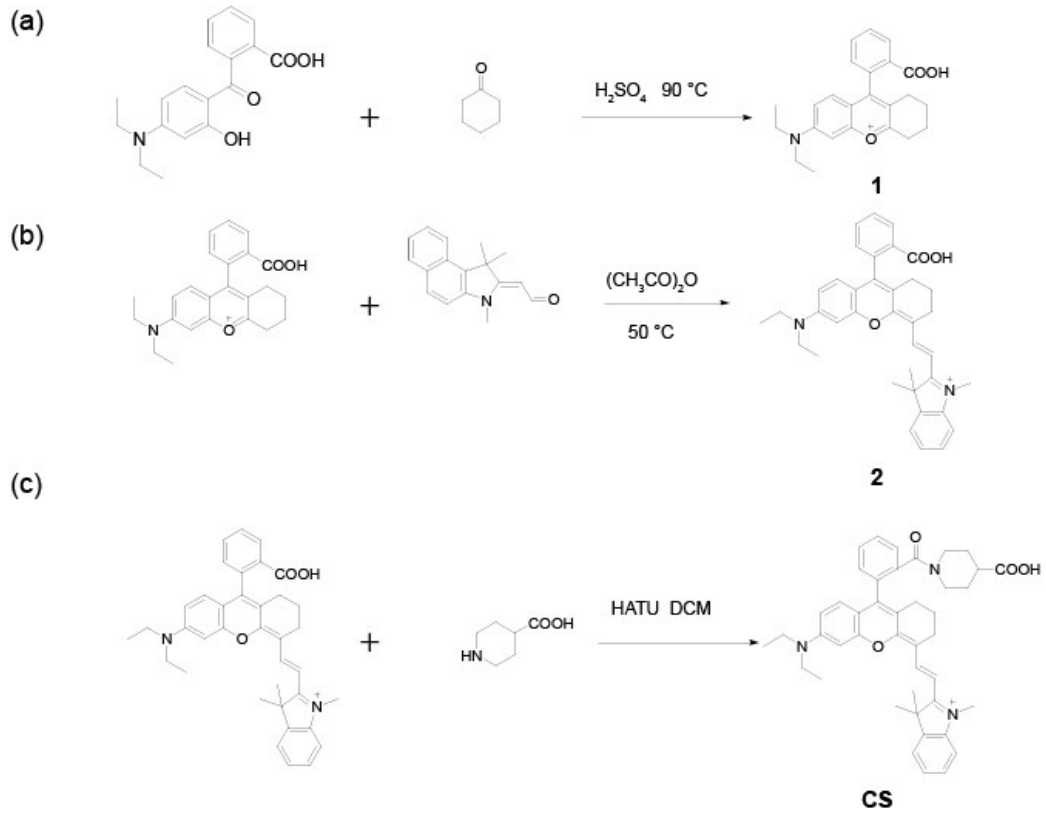
Table S1 The photophysical properties of the fluorescent •OH probes.

Probes	λex (nm)	λem (nm)	Linear range (μM)	Detection limit (μM)	Application	Ref.
BMPTA-Tb^{3+}	320	545	0.1-10	0.27	cell	R1
DNA-AgNCs	440	550	0.05-5	-	cell	R2
AuNC@HPF	488	515 and 632	0-150	0.68	cell	R3
Si QDs−Ce6	410	490 and 660	1-200	0.97	cell	R4
GQD–hydroIR783	440	520 and 800	0–20	0.2	mice	R5
AuNCs-CS	440	600 and 740	0.5–40	0.014	mice	This work



Scheme S1 The synthetic scheme for the compound CS.

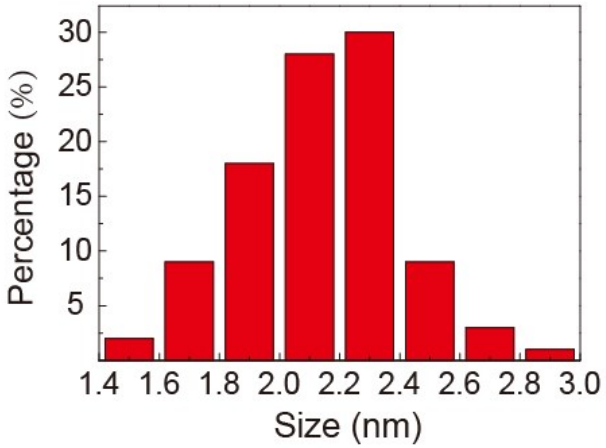


Figure S1 The size distribution of the AuNCs. Data were obtained by measuring 100 particles from the TEM images.

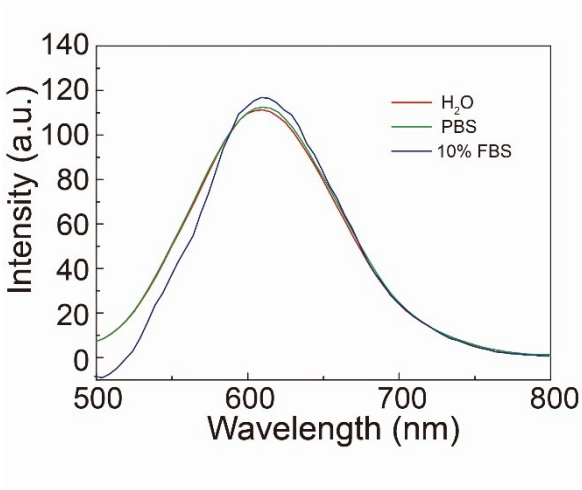


Figure S2 The fluorescence of AuNCs dispersed in different medium.

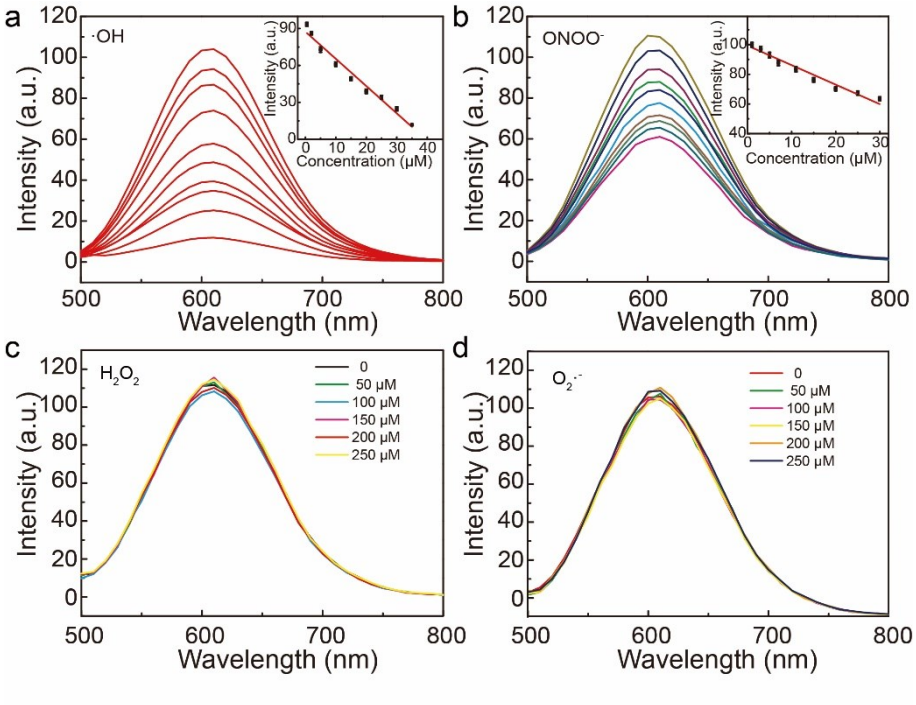


Figure S3 The fluorescence spectra of AuNCs upon addition of •OH (0-50 μM), $ONOO^-$ (0-30 μM), H_2O_2 (0-250 μM) or $O_2•^-$ (0-250 μM) in physiological saline solution. λ_{ex} = 440 nm.

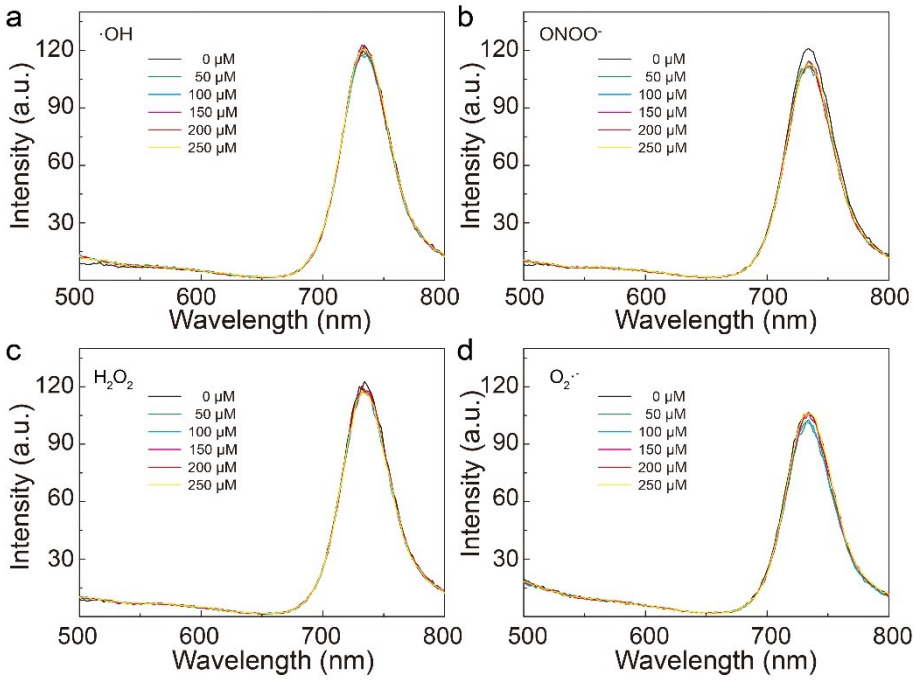


Figure S4 The fluorescence spectra of CS upon addition of different kinds of ROS, including •OH (0-250 μM), $ONOO^-$ (0-50 μM), H_2O_2 (0-250 μM) and $O_2•^-$ (0-250 μM), in physiological saline solution (λ_{ex} = 440 nm).

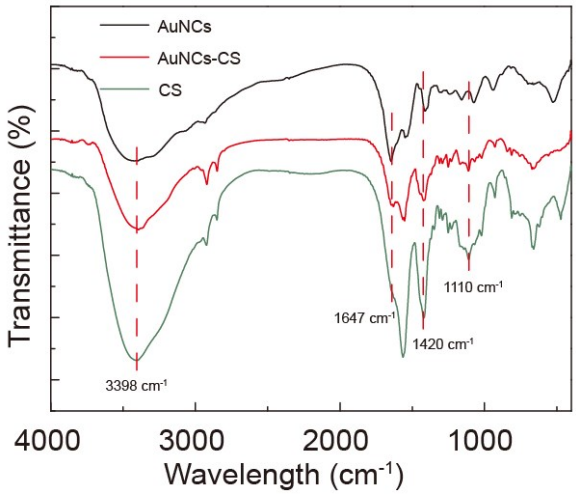


Figure S5 The FT-IR spectra of AuNCs, CS and CS-modified AuNCs.

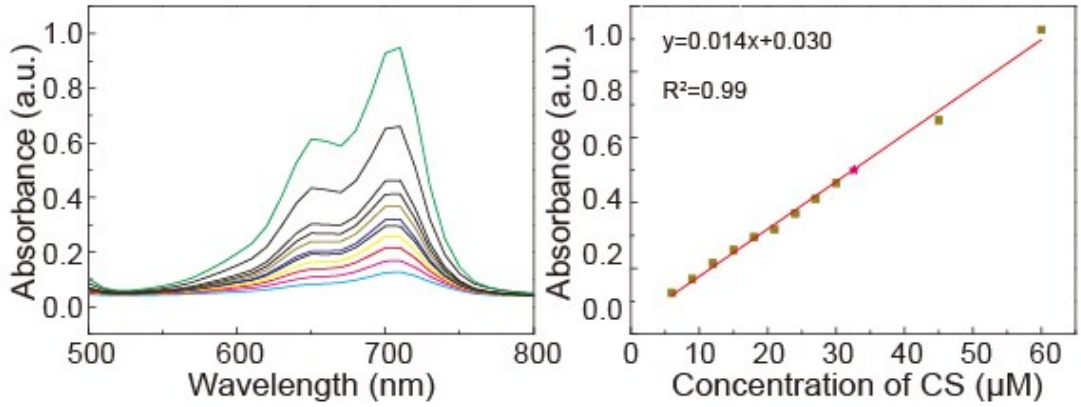


Figure S6 The absorption spectra of CS at different concentrations (6 to 60 μM).

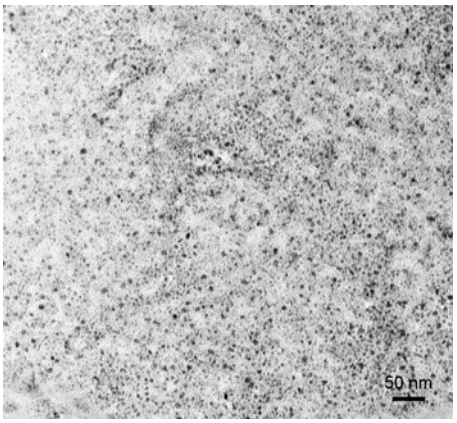


Figure S7 The TEM imaging of CS-modified AuNCs.

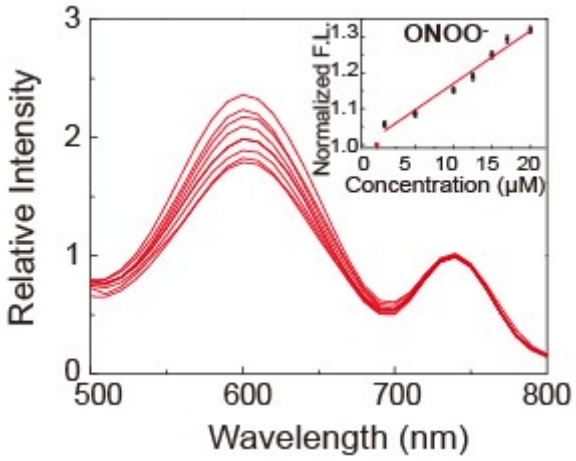


Figure S8 The fluorescence spectra of CS-modified AuNCs with different concentrations of $ONOO^-$ (1, 5, 10, 12.5, 15, 17 and 20 μM).

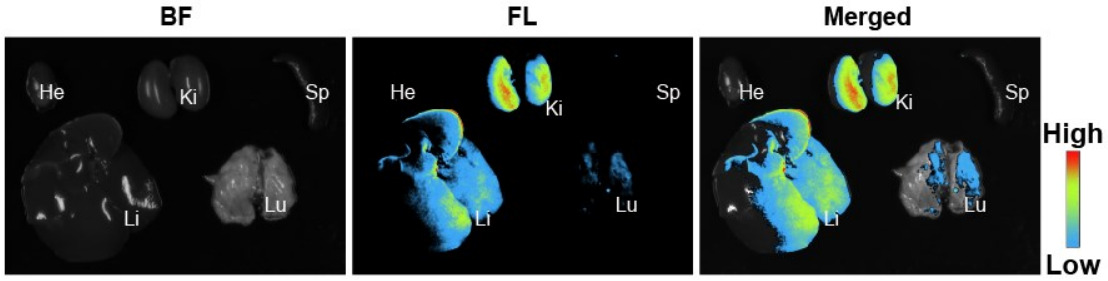


Figure S9 The fluorescent bioimaging of representative organs of mice after intravenous injection of AuNCs (He: heart; Ki: kidney; Sp: spleen; Li: liver; Lu: lung).

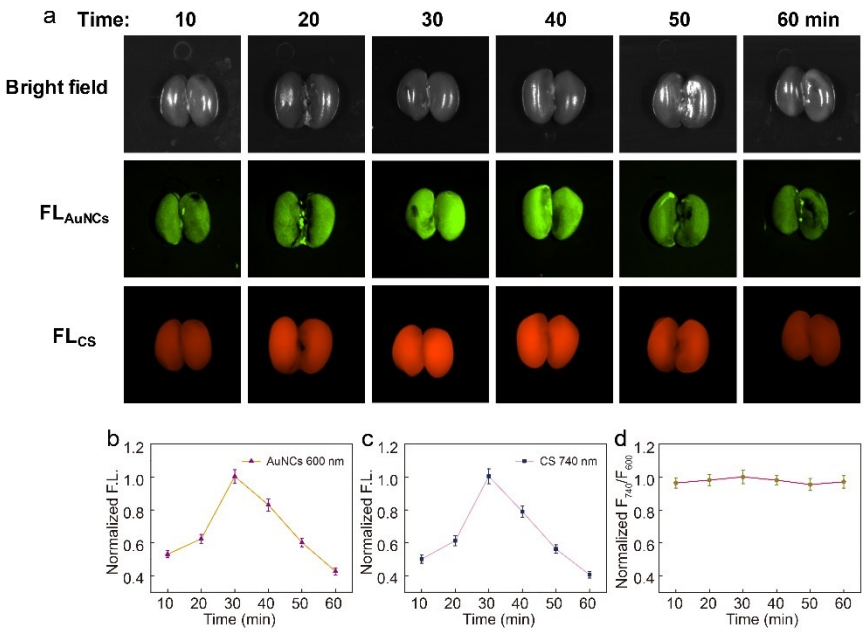


Figure S10 a) The representative fluorescence images for the mice injected with AuNCs-CS with different time. The normalized luminescence intensities of b) AuNCs, c) CS and d) the values of F_{740}/F_{600} (n= 3 for each group).

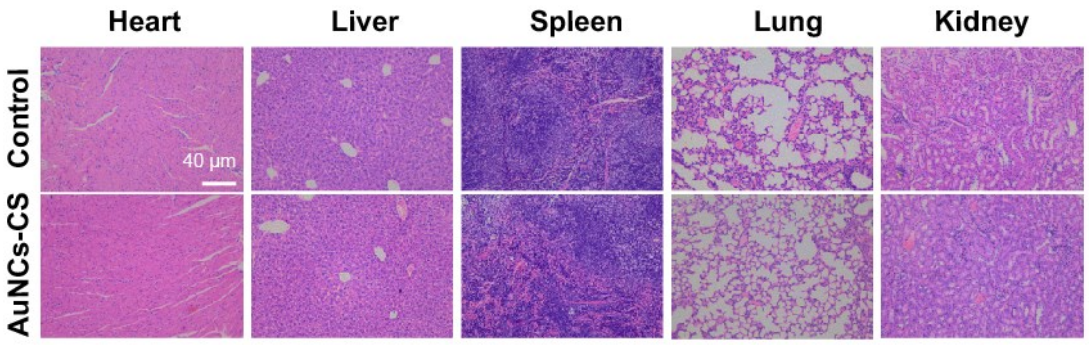


Figure S11 The H&E staining of heart, liver, spleen, lung and kidney of mice injected with saline or CS-modified AuNCs for 24 h.

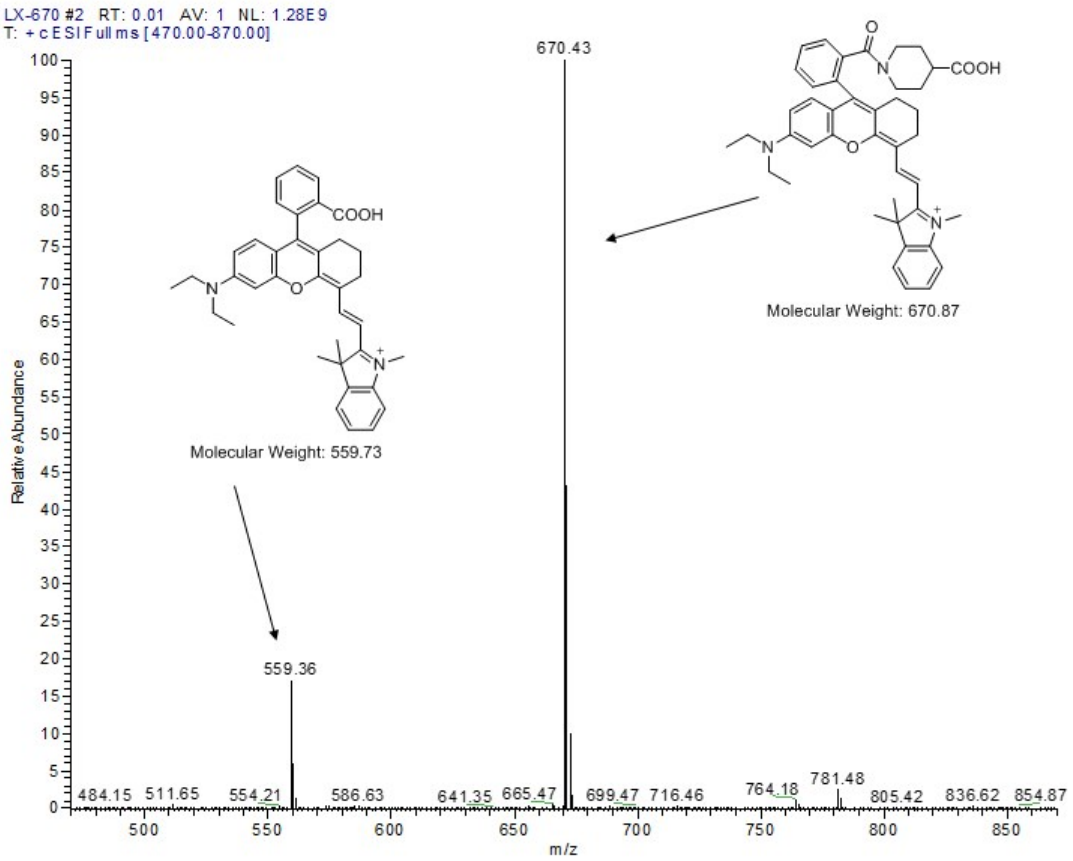


Figure S12 The mass spectrum of the compound CS.

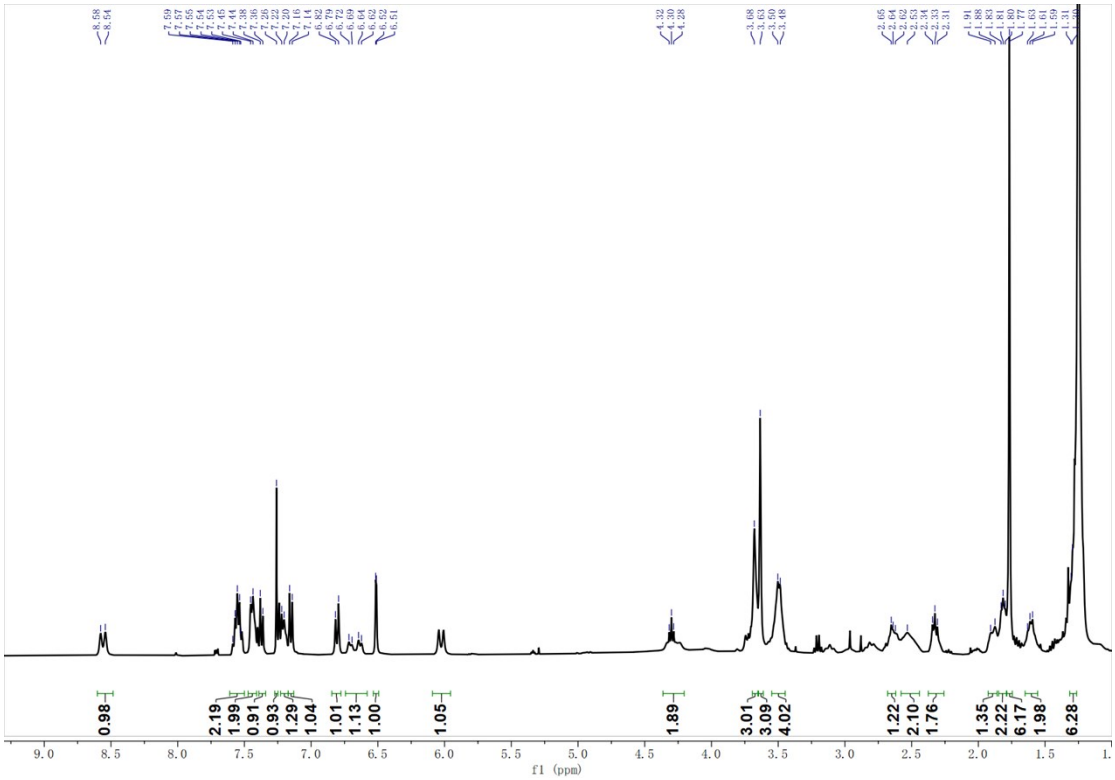


Figure S13 The ^{1}H NMR spectra of the compound CS. ^{1}H NMR (400 MHz, Chloroform-d) δ 8.56 (d, *J* = 13.8 Hz, 1H), 7.61 – 7.50 (m, 2H), 7.44 (d, *J* = 7.2 Hz, 2H), 7.37 (d, *J* = 7.8 Hz, 1H), 7.26 (s, 1H), 7.21 (d, *J* = 7.3 Hz, 1H), 7.15 (d, *J* = 8.0 Hz, 1H), 6.81 (d, *J* = 9.2 Hz, 1H), 6.67 (dd, *J* = 28.6, 9.2 Hz, 1H), 6.51 (d, *J* = 2.3 Hz, 1H), 6.03 (d, *J* = 14.1 Hz, 1H), 4.30 (t, *J* = 6.7 Hz, 2H), 3.68 (s, 3H), 3.63 (s, 3H), 3.49 (d, *J* = 7.5 Hz, 4H), 2.64 (d, *J* = 12.5 Hz, 1H), 2.53 (s, 2H), 2.33 (t, *J* = 7.5 Hz, 2H), 1.89 (d, *J* = 13.2 Hz, 1H), 1.81 (t, *J* = 6.2 Hz, 2H), 1.77 (s, 6H), 1.61 (t, *J* = 7.6 Hz, 2H), 1.30 (d, *J* = 4.2 Hz, 6H).

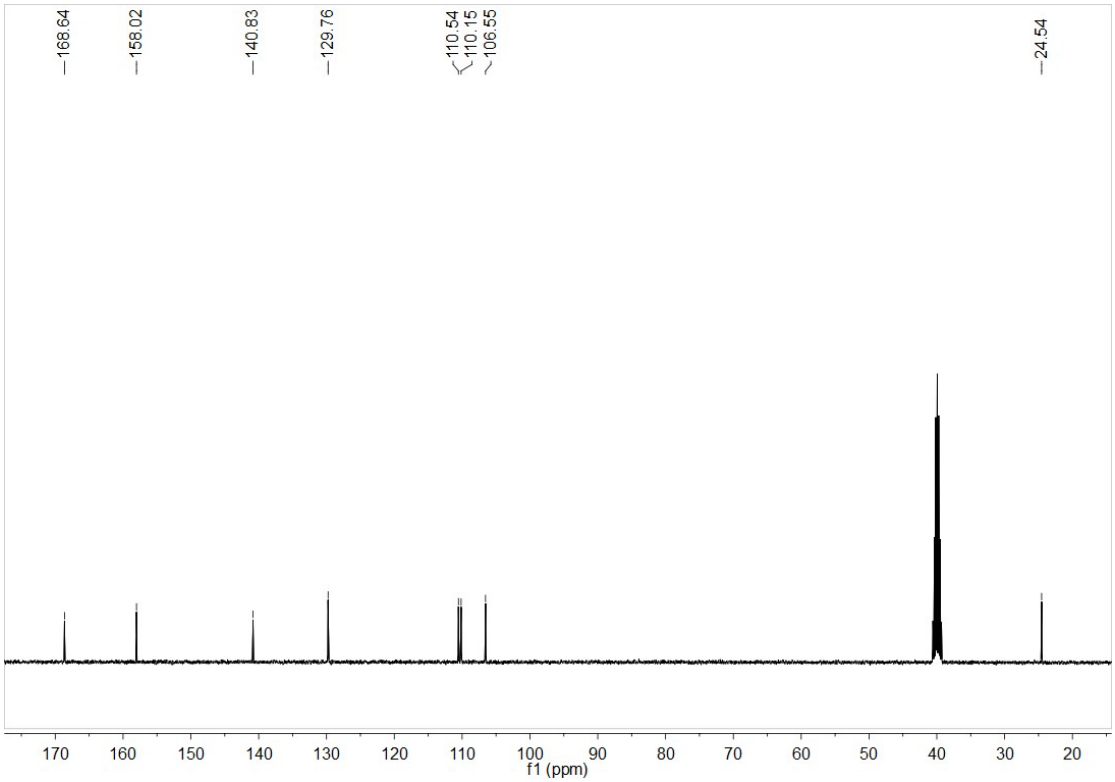


Figure S14 The ^{13}C NMR spectra of the compound CS. ^{13}C NMR (101 MHz, Chloroform-d) δ 167.93, 163.23, 155.85, 142.90, 140.81, 135.01, 133.08, 130.02, 129.53, 129.12, 128.89, 125.50, 122.44, 116.09, 113.46, 112.31, 110.69, 95.89, 49.42, 45.31, 32.04, 29.81, 29.48, 28.52, 27.12, 22.81, 12.53.

References:

1. G. Cui, Z. Ye, J. Chen, G. Wang and J. Yuan, *Talanta*, 2011, **84**, 971-976.
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