

Supporting information for

Fast-responsive fluorescent probe based on the styrylcoumarin dye for visualizing hydrogen sulfide in living MCF-7 cells and zebrafish

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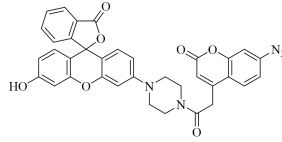
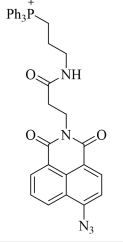
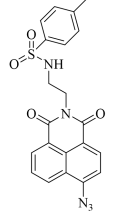
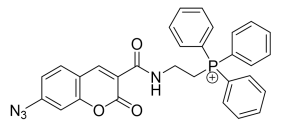
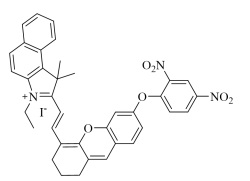
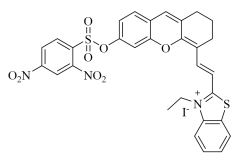
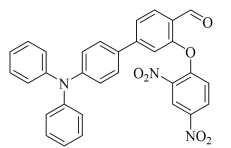
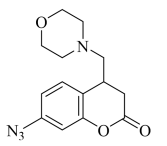
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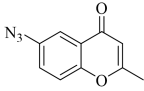
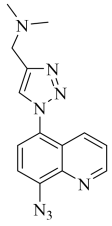
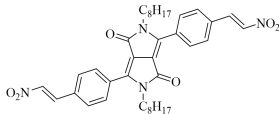
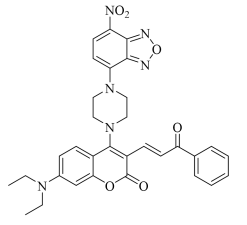
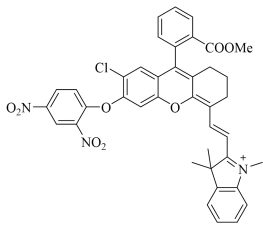
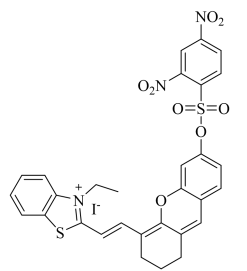
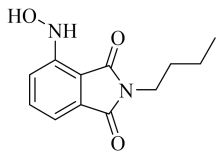
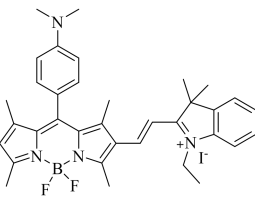
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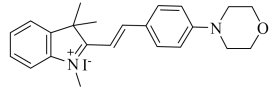
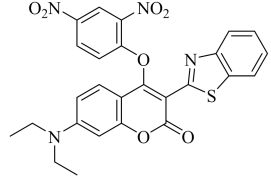
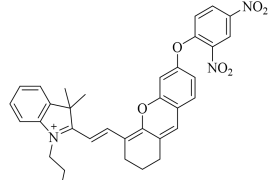
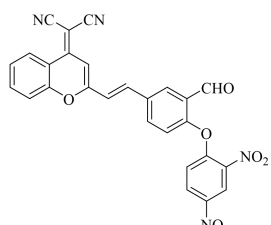
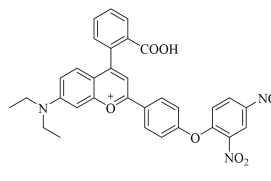
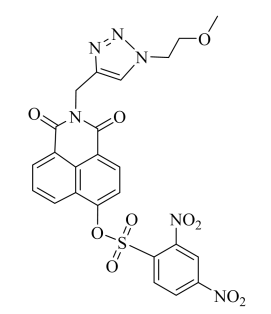
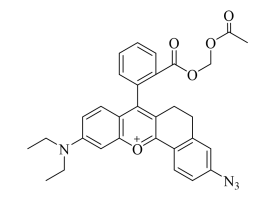
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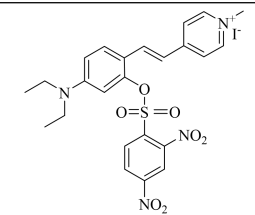
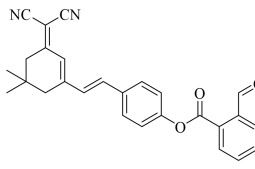
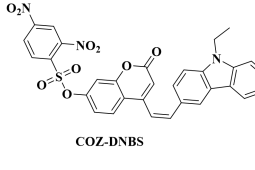
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Table S1. The reported fluorescent probes for H₂S.

Probe	Stokes shift	Test system	Detection limit	Response time	Application	Literature
	68 nm	MeCN:PBS = 9:1, v/v	0.031 μM	8 s	HepG2 cells Nude mice	J Mater Chem B, 2018, 6, 4903-4908
	100 nm	PBS buffer with 30% DMSO	1.65 μM	5-6 min	HeLa cells Fresh rat liver slices	Sensors and Actuators B, 2017, 248, 50-56
	105 nm	PBS buffer with 5% DMSO	7.77 μM	30 min	HeLa cells The liver tissue slices Zebrafish	Scientific Reports, 2017, 7, 1-9
	70 nm	PBS buffer with 0.2% DMSO	24.3 nM	20 min	HeLa cells MDA-MB-231 DU145 cells 3T3-L1 cells	Chemistry, an Asian Journal, 2016, 11, 68-71
	61 nm	PBS:DMF = 1:1, v/v	96 nM	4 min	HepG2 cells Nude mice	Dyes and Pigments, 2021, 185, 108901
	106 nm	DMSO:PBS = 2:1, v/v	0.1 μM	0.5 min	SHSY5Y cells The mouse	Dyes and Pigments, 2021, 189, 109231
	116 nm	HEPES buffer with 20% THF.	7.63 μM	20 min	MCF-7 cells	New J.Chem., 2021, 45, 13399-13405
	103 nm	PBS buffer with 1% DMF	47 nM	-----	HepG2 cells	Analytical Methods, 2017, 9, 2859-2864

	140 nm	PBS:DMSO = 5:5, v/v	18 nM	30 min	HeLa cells	Talanta, 2019, 195, 850-856
	140 nm	PBS buffer with 10% DMSO	214.5 nM	-----	A549 cells HepG2 cells Rat renal tubular epithelial cells	Organic & Biomolec-ular Chemistry, 2018,16, 712-716
	44 nm	CH ₃ CN	5.2 nM	-----	HeLa cells	New J.Chem., 2017, 41, 3367-3373
	85 nm	PBS buffer with 1 mM CTAB	0.2 μM	50 min	A549 cells Zebrafish	Tetrahedro n, 2021, 89, 132174
	69 nm	PBS buffer with 20% ethanol	0.51 μM	<30 min	HL-7702 cells NAFLD cells The mouse	Anal. Chem., 2021, 93, 16673-166 82
	83 nm	DMSO:PBS = 2:1, v/v	10 nM	0.5 min	SHSY5Y cells The mouse	Dyes and Pigments, 2021, 189, 109231
	93 nm	PBS buffer with 50% EtOH	8.87 nM	-----	HeLa cells	New J.Chem., 2017, 41, 1119-1123
	85 nm	PBS buffer	1.7 μM	2 min	HeLa cells	Chemical Communi- cations, 2016, 52, 6415-6418

	76 nm	DMSO:PBS = 1:1, v/v	15 nM	2 min	HeLa cells	Analytical Methods, 2017, 9, 3290-3295
	54 nm	PBS buffer with 50% DMSO	90 nM	3 h	HeLa cells	Sensor Actuat. B-Chem, 2016, 232, 705-711
	53 nm	PBS buffer with 5% CH ₃ CN	38 nM	-----	MCF-7 cells Living mice	Scientific Reports, 2016, 6, 18868
	137 nm	DMSO:PBS = 1:1, v/v	83 nM	8 min	HeLa cells	Sensor Actuat. B-Chem, 2018, 255, 2347-2355
	73 nm	PBS buffer with 1% DMSO	4.05 μM	25 min	HeLa cells	New J.Chem., 2018, 42, 19478- 19484
	185 nm	PBS buffer	9.95 nM	10 s	Paper Yellow croakers	Chem. Commun., 2021, 57, 5012-5015
	85 nm	PBS buffer with 5% DMSO	2.5 μM	25 min	HeLa cells Zebrafish	Anal. Bioanal. Chem., 2019, 411, 7127-7136

	111 nm	PBS:DMF= 1:1, v/v	356 nM	4 s	MCF-7 cells	J. Agric. Food Chem., 2021, 69, 4628-4634
	150 nm	PBS:DMSO = 9:1, v/v	39.1 nM	12 min	HeLa cells Zebrafish	Anal. Chem., 2020, 92, 9982-9988
 <p>COZ-DNBS</p>	173 nm	PBS:CH ₃ C N= 8:2, v/v	38.6. nM	< 1min	MCF-7 cells Zebrafish	This work

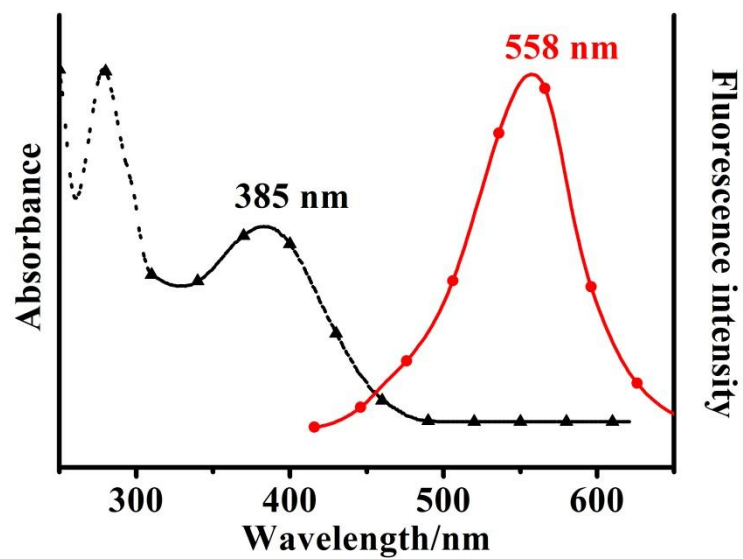


Fig.S1 Absorption (black line) and fluorescence spectra (red line) of COZ-OH in PBS buffer.

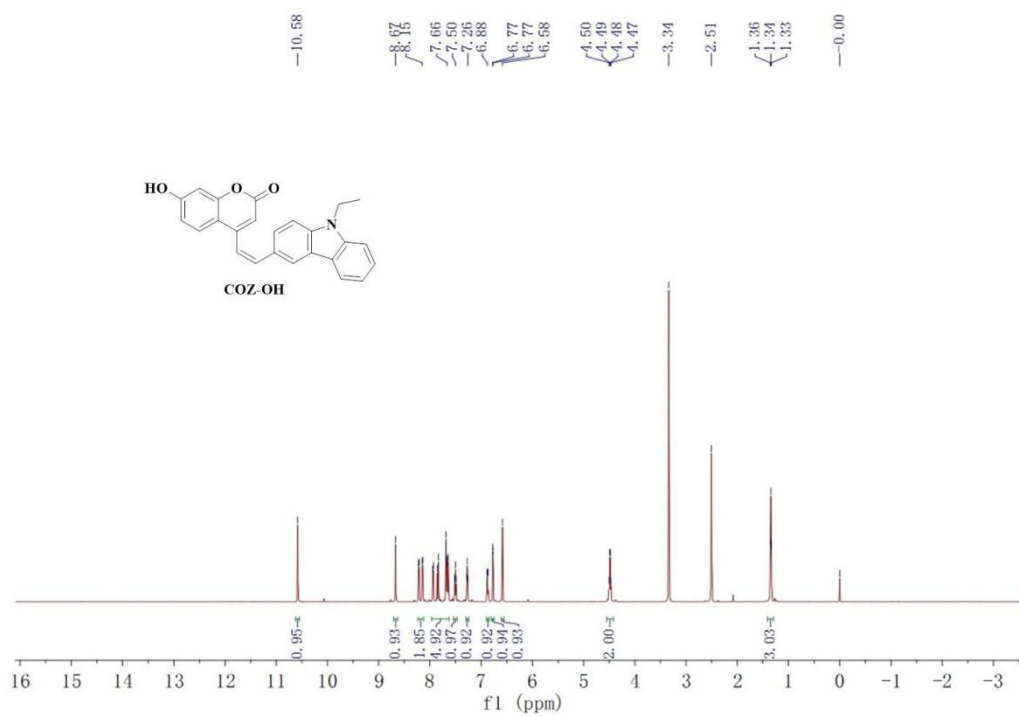


Fig.S2 ¹H NMR spectrum of COZ-OH in DMSO-d₆.

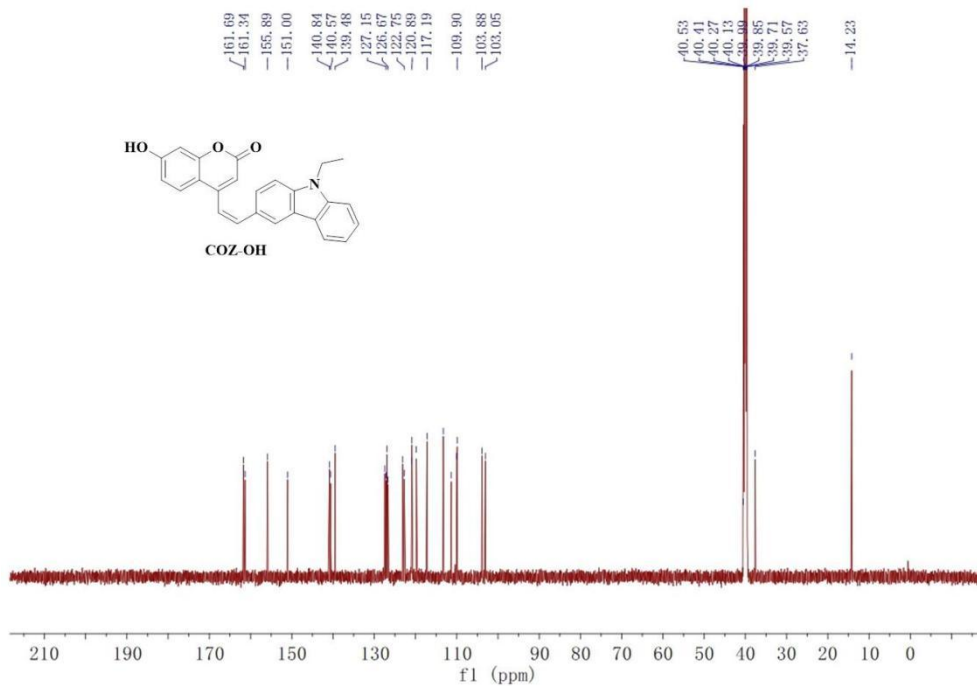


Fig.S3 ^{13}C NMR spectrum of COZ-OH in $\text{DMSO-}d_6$.

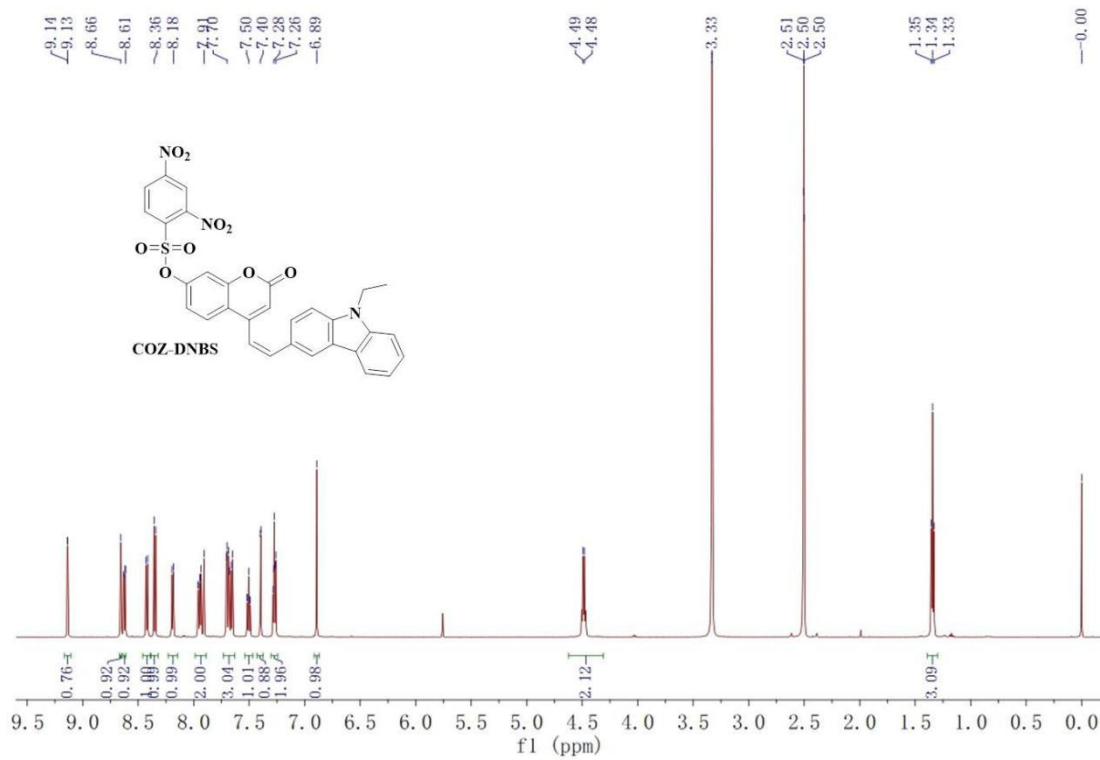


Fig.S4 ^1H NMR spectrum of COZ-DNBS in $\text{DMSO-}d_6$.

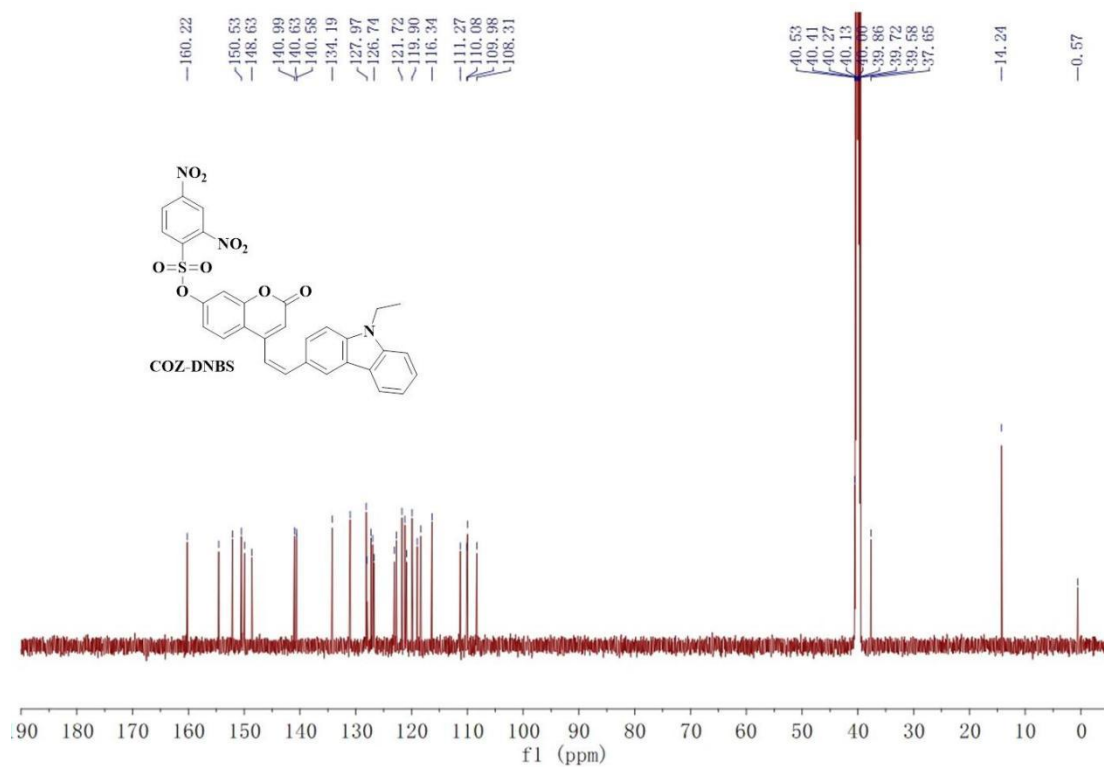


Fig.S5 ¹³C NMR spectrum of COZ-DNBS in DMSO-*d*₆.

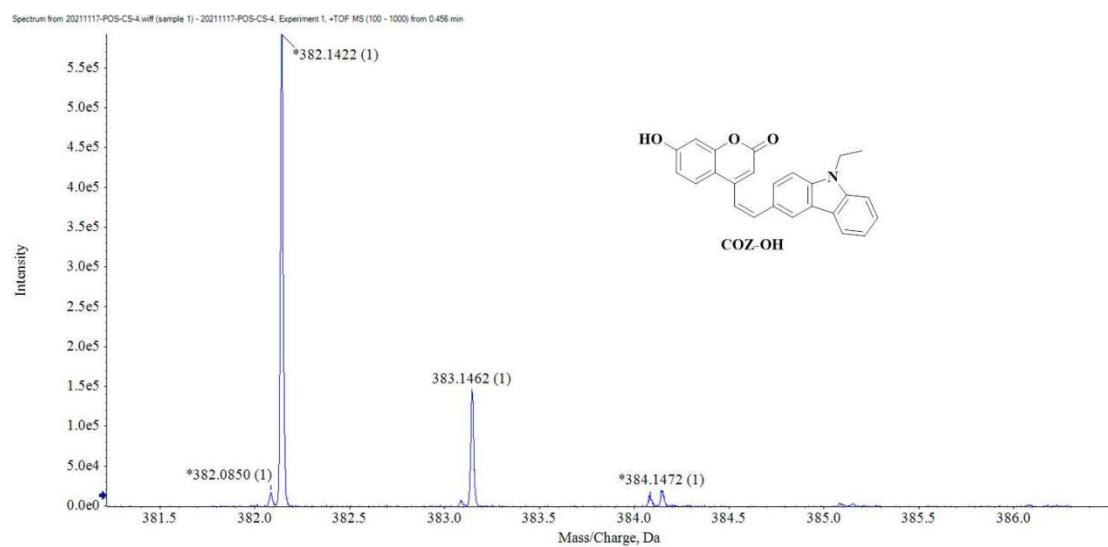


Fig.S6 HRMS spectrum of COZ-OH.

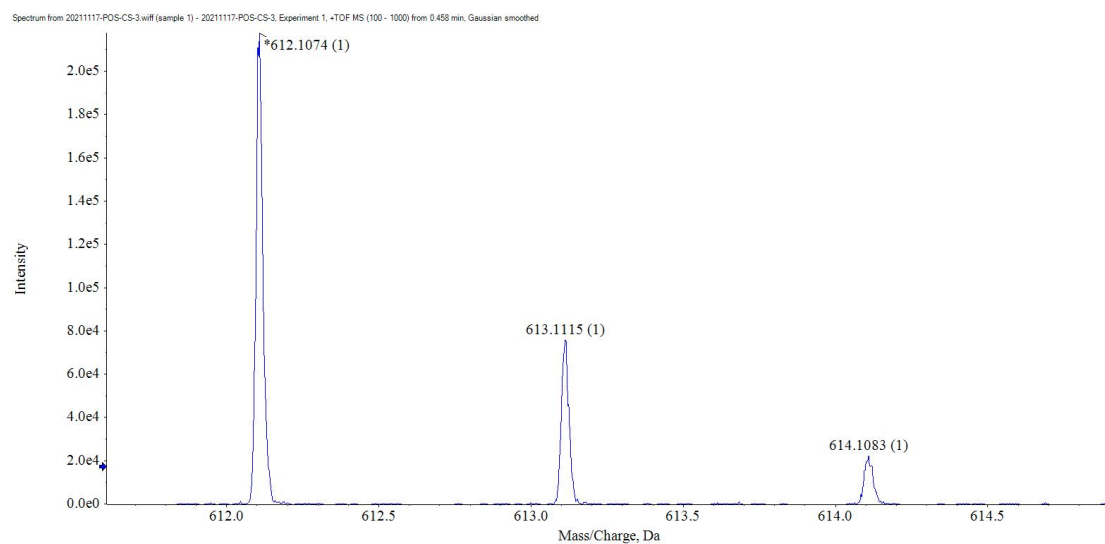


Fig.S7 HRMS spectrum of **COZ-DNBS**.

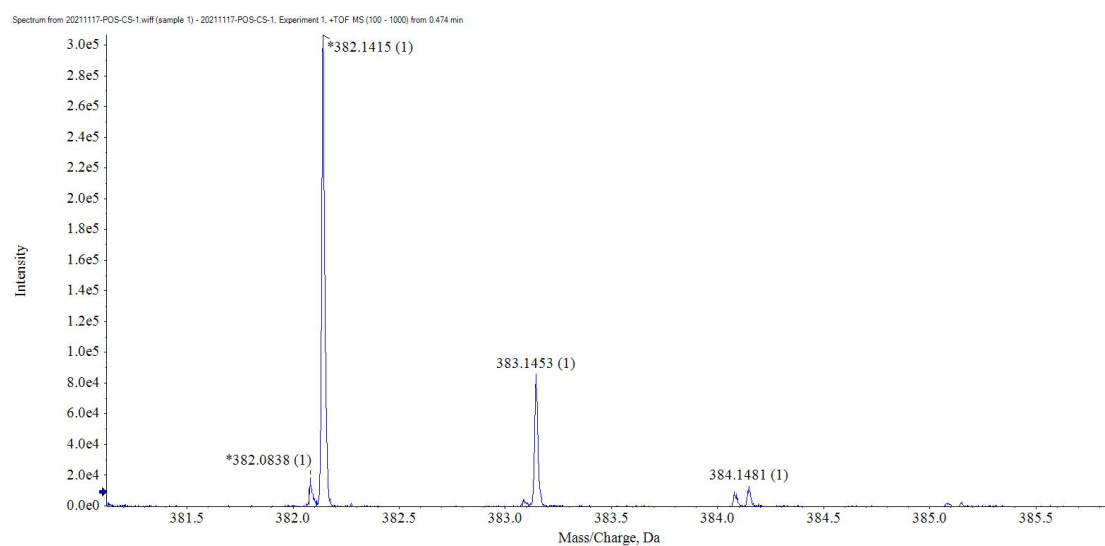


Fig.S8 HRMS spectrum of **COZ-DNBS + H₂S**.

Table S2 The recovery test of H₂S with probe **COZ-DNBS** in spiked samples.

Water Sample	Spiked (μM)	Found (μM)	Recovery(%)	RSD (%)
Tap	5.00	4.92	98.4	0.73
	10.00	9.61	96.1	1.65
	20.00	20.68	103.4	2.19
Lake	5.00	5.01	100.2	1.17
	10.00	9.56	95.6	0.94
	20.00	19.68	98.4	1.58
River	5.00	4.89	97.8	0.41
	10.00	10.17	101.7	1.62
	20.00	20.64	103.2	1.03