Supplementary Data

For

A novel naphthalene-based fluorescent probe for highly selective detection of cysteine with large Stokes shift and its application in bioimaging

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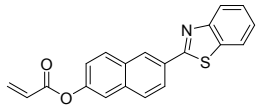
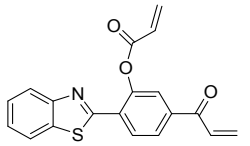
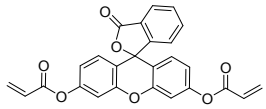
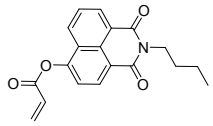
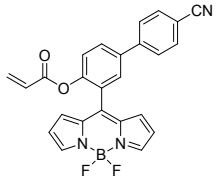
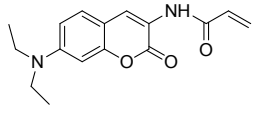
15. Figsure S14. Cell viabiality to Hela cells of probe **BTNA**.

	Probe	**Solvent (pH=7.4)**	**Dose of Cys (eq.)**	**Time (min)**	**Stokes shift （nm ）**	**Analyte**	**Detection Limit (μM)**	**Reference**
1	 (Ex=365nm,Em=505nm)	DMSO-PBS (1/1,v/v)	10	9	140	Cys	0.18	**This work**
2	 (Ex=333nm,Em=450 nm)	DMSO-PBS (1/9,v/v)	10	30	117	Cys Hcy GSH	0.80	[1]
3	 (Ex=450nm,Em=520 nm)	EtOH-water (2/3, v/v)	14.5	60	70	Cys Hcy	0.50	[2]
4	 (Ex=452nm,Em=547 nm)	DMSO-PBS (containing 0.2% DMSO)	20	7	95	Cys Hcy	1.8	[3]
5	 (Ex=503nm,Em=525 nm)	CH_3CN-H_2O (1:1,v/v)	50	150	22	Cys	0.037	[4]
6	 (Ex=380nm,Em=490 nm)	H_2O-CH_3OH (1/9,v/v)	30	180	110	Cys Hcy GSH	0.68	[5]

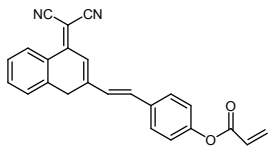
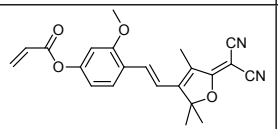
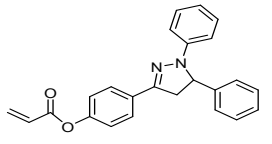
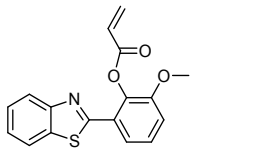
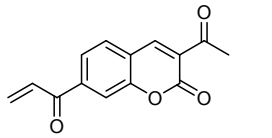
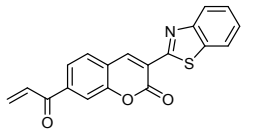
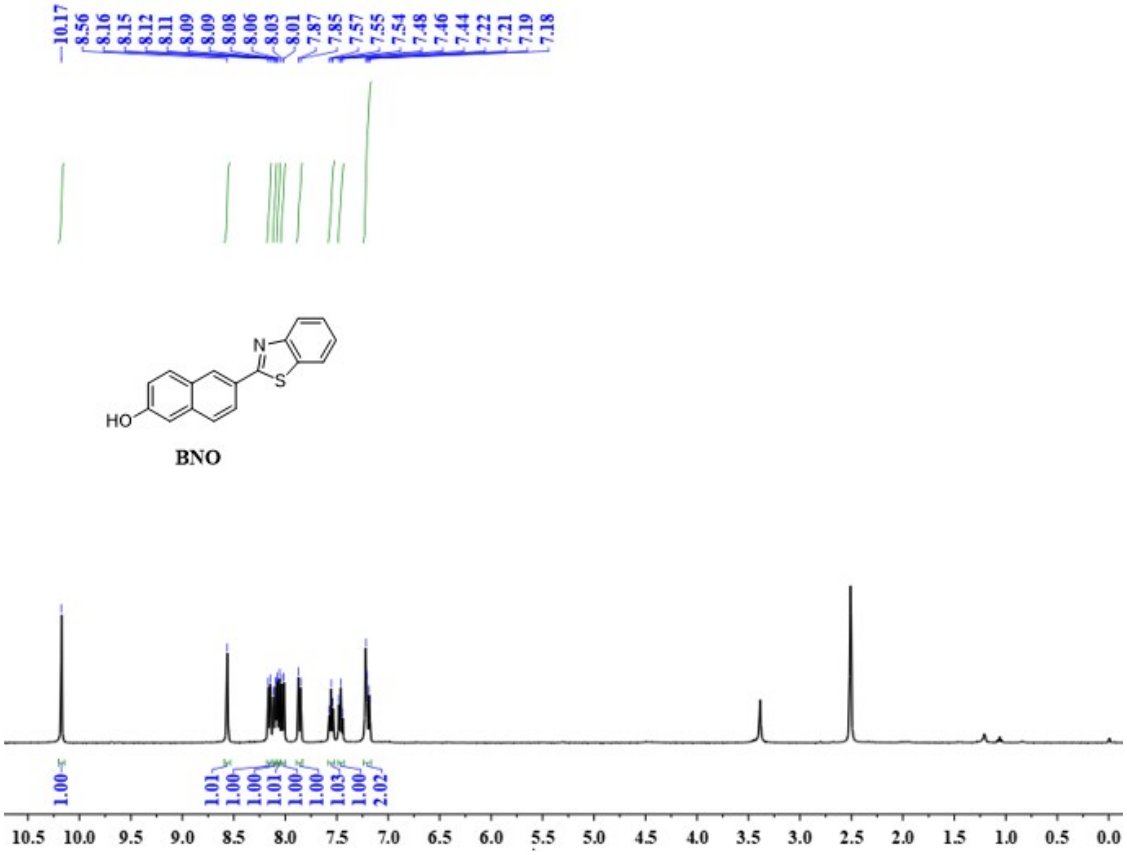
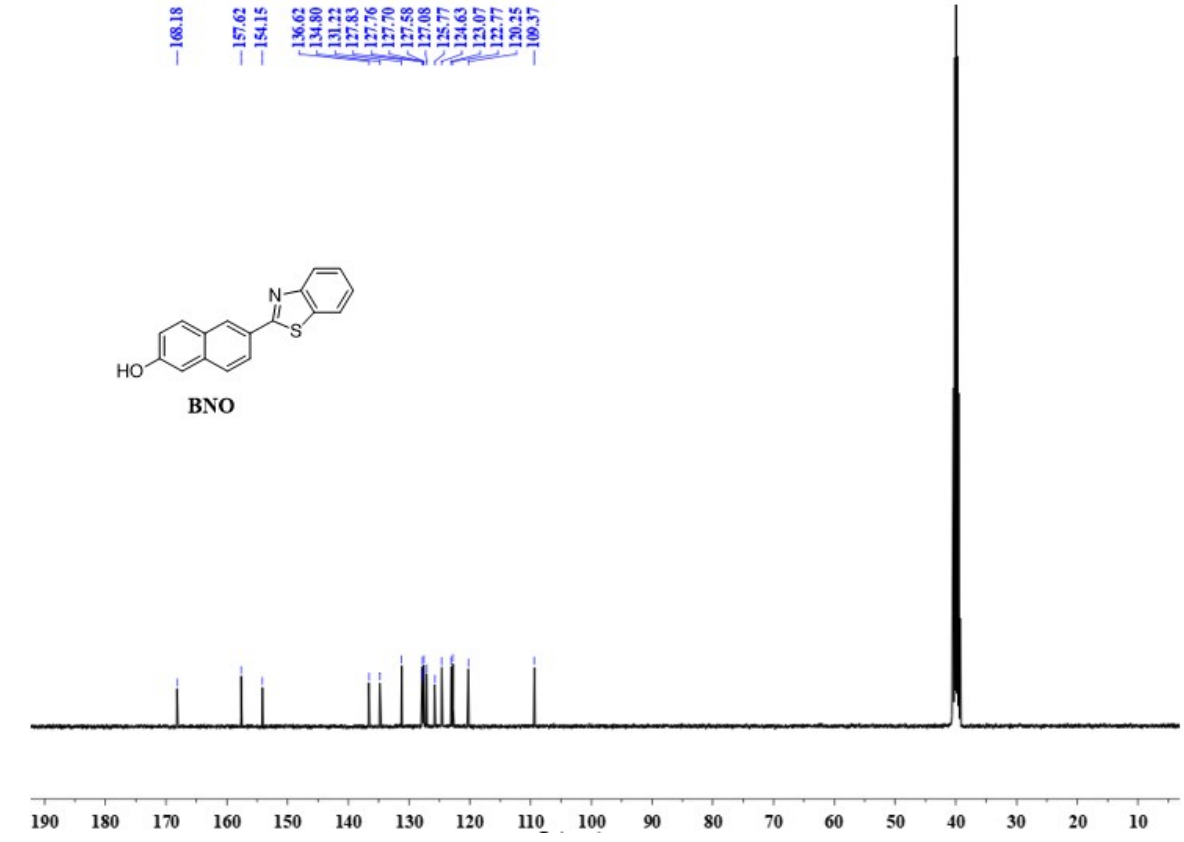
7	 (Ex=560nm,Em=676 nm)	DMSO-PBS (1/1,v/v)	5	20	116	Cys Hcy	0.081	[6]
8	 (Ex=585nm,Em=635 nm)	DMSO-PBS (1/1,v/v)	10	30	50	Cys Hcy	0.3	[7]
9	 (Ex=370nm,Em=474 nm)	EtOH-PBS (3/7, v/v)	10	no data	104	GSH	0.082	[8]
10	 (Ex=377nm,Em=487 nm)	EtOH-H_2O (2:8, v/v)	1	40	110	Cys Hcy	no data	[9]
11	 (Ex=420nm,Em=454 nm)	EtOH-HEPES (2:8, v/v)	15	40	34	Cys GSH	0.657	[10]
12	 (Ex=458nm,Em=498 nm)	DMSO-PBS (1/1,v/v)	5	15	40	Cys Hcy GSH	0.02	[11]

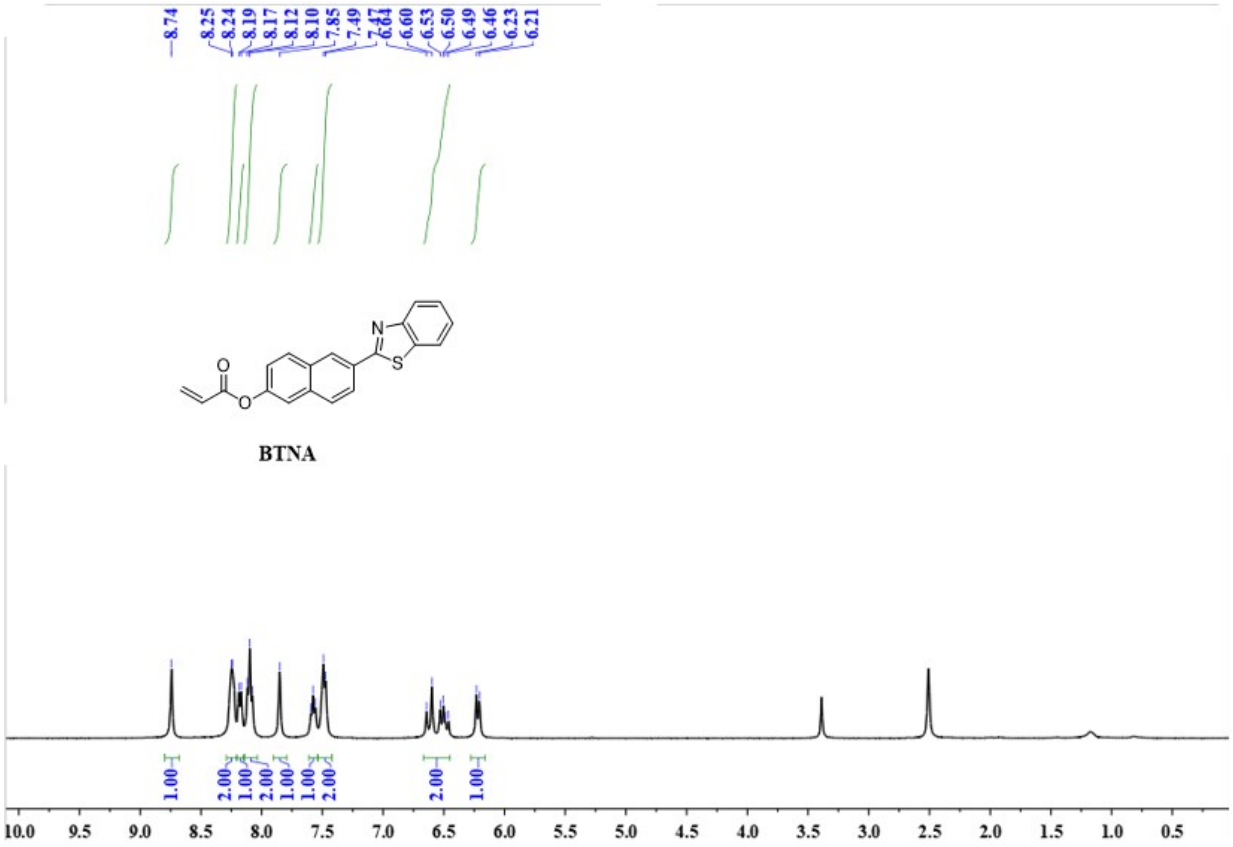
Table S1. The comparison between probe **BTNA** and some similar probes



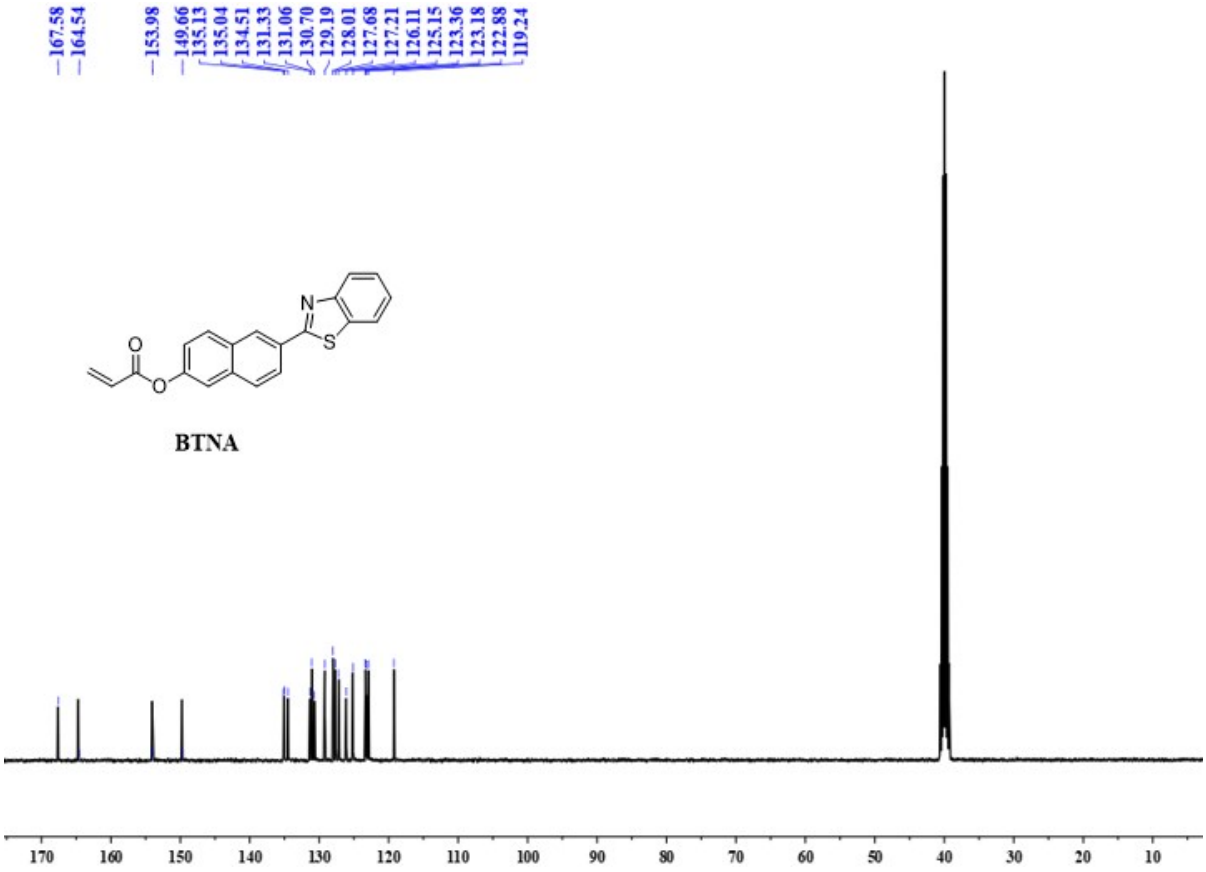
Figsure S1. [1]H NMR (400 MHz) spectrum of compound **BNO** in DMSO-d_6.



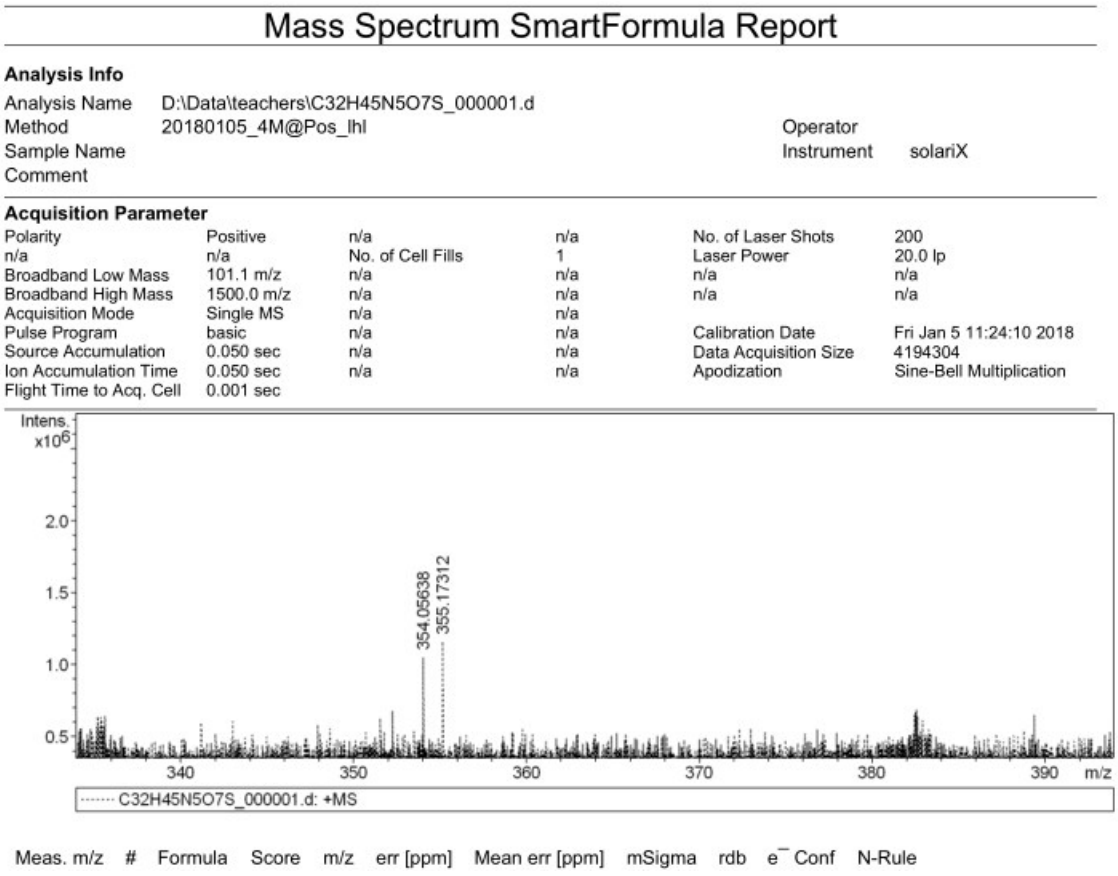
Figsure S2.[13]C NMR (100 MHz) spectrum of compound **BNO** in DMSO-d_6.



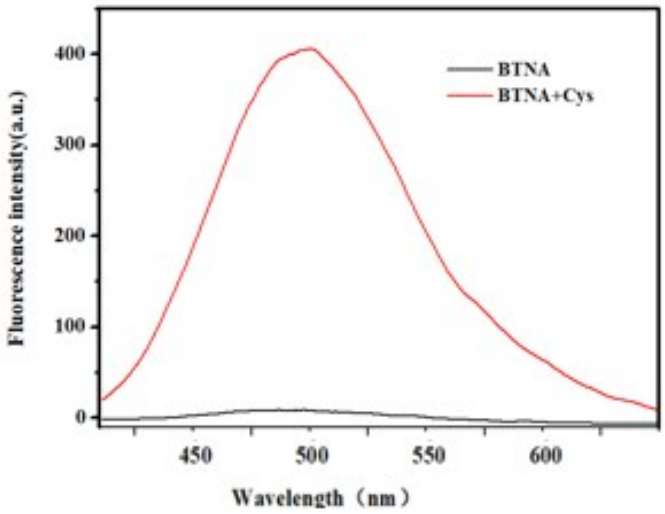
Figsure S3. ^{1}H NMR (400 MHz) spectrum of probe **BTNA** in DMSO-d_6.



Figsure S4. ^{13}C NMR (100 MHz) spectrum of probe **BTNA** in DMSO-d_6.



Figsure S5. HRMS (ESI^+) spectrum of probe **BTNA**.



Figsure S6. Fluorescence spectra of **BTNA** by itself (10 μM, black line), and **BTNA** (10 μM) in the prescence of Cys (1 mM, red line).Ex=365 nm.

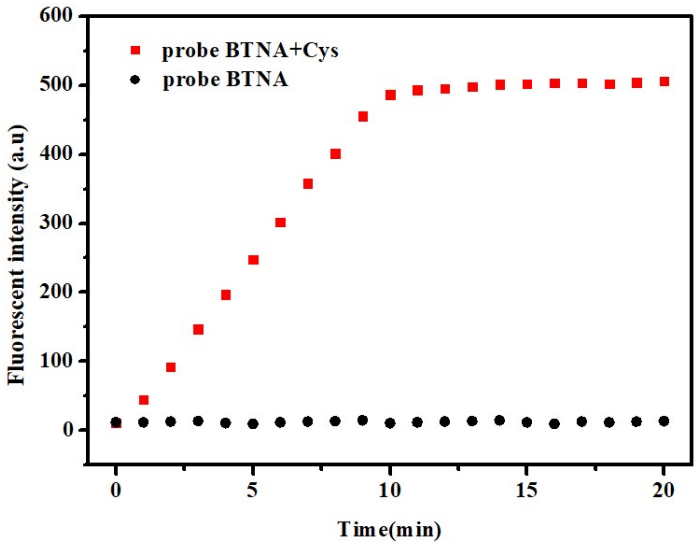
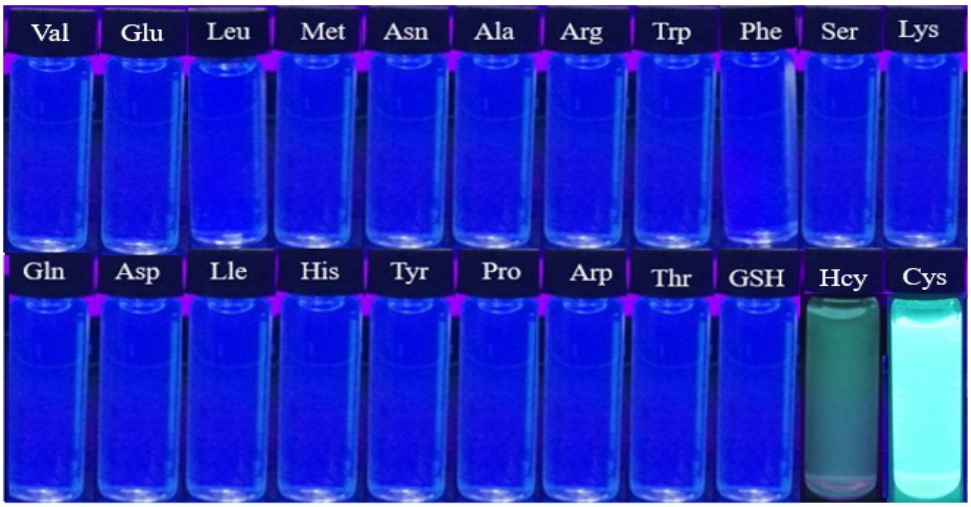
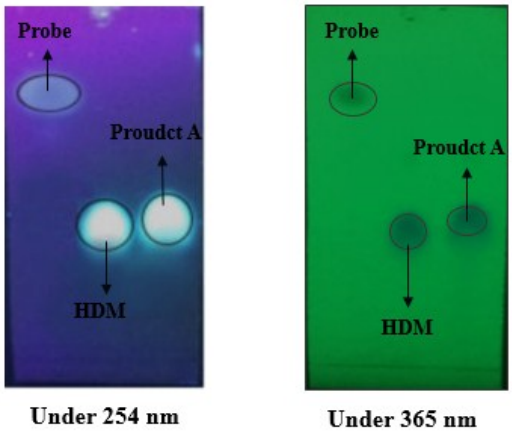


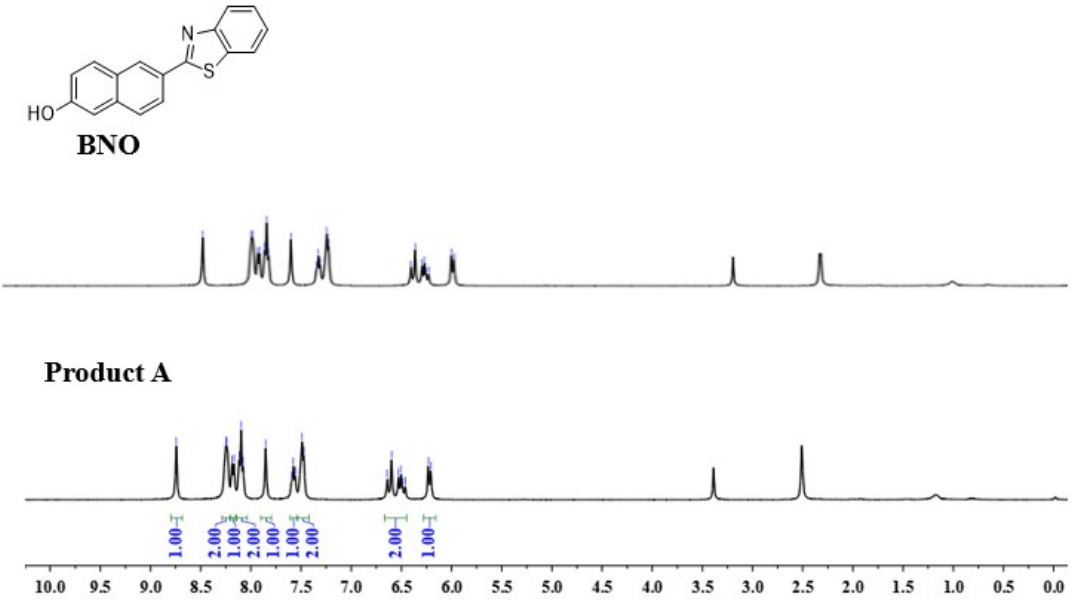
Figure S7. Time-dependent fluorescence intensity of **BTNA** (10 μM) at 511 nm in the absence and presence of Cys (60 μM) in PBS buffer (50% DMSO) solution. Ex=365 nm.



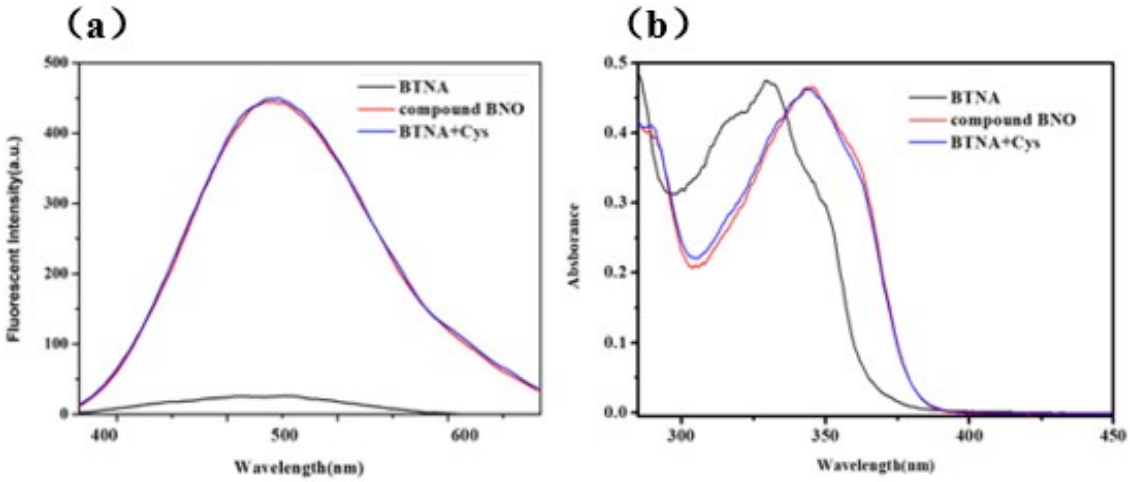
Figsure S8. Emission color changes of probe **BTNA** with various analytes.



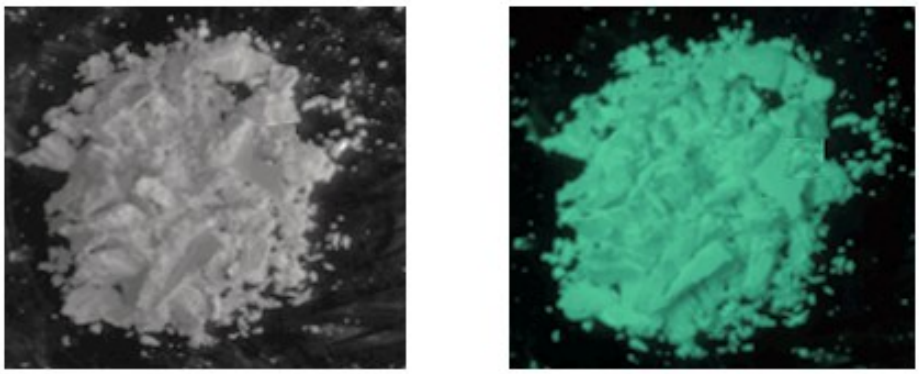
Figsure S9. TLC analysis of probe **BTNC**, reference compound **HDM** and the reaction product of probe **BTNC** with Cys. The TLC plate was observed under a light of 254 nm and 365 nm, respectively. The eluent for TLC, petroleum ether:ethyl acetate = 4:1 (v/v).



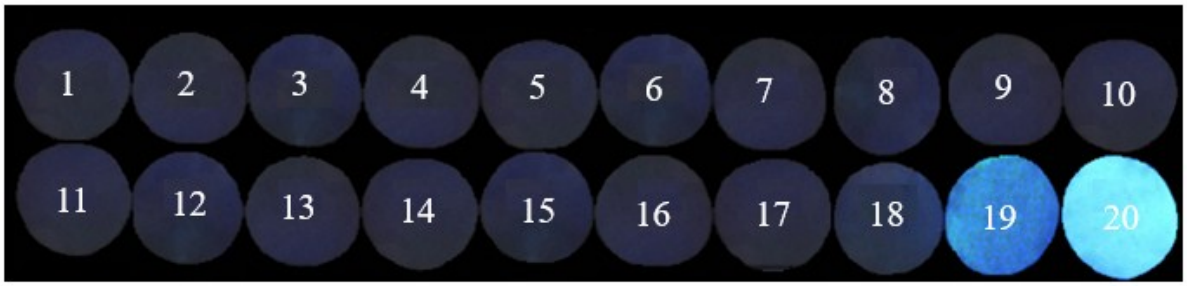
Figsure S10. ^{1}H NMR spectrum analysis of product **A** with the reference compound **BNO**.



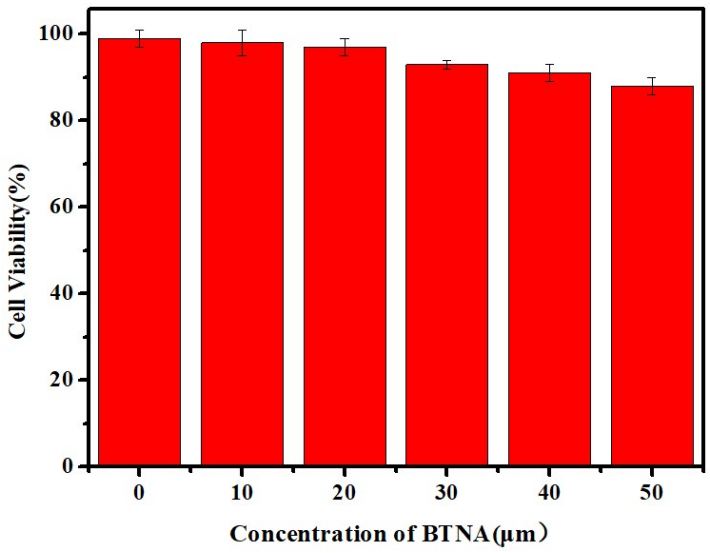
Figsure S11. A comparison of (a) fluorescent spectra and (b) absorbance spectra of probe **BTNA** (10 μM), compound **BNO** (10 μM), and the mixture of probe **BTNA** (10 μM) + Cys (50 μM) after 15 min in PBS buffer (50% DMSO) solution.



Figsure S12. The color of solid compound **BNO** under room light and UV light.



Figsure S13. Fluorescence changes in test paper (under a 365 nm UV lamp) with probe **BTNA** upon addition of some representative analytes (1. none, 2. Ala, 3. Arg, 4. Asn 5.Asp, 6.Gln, 7. Glu, 8. His, 9. HlE, 10. Leu, 11.Lys, 12. Met, 13.Phe, 14. Pro, 15. Ser, 16.Trp, 17. Tyr, 18. GSH, 19. Hcy, 20. Cys. Except GSH were used 1mM, others were used 200 μM for the test).



Figsure S14. Cell viabiality to Hela cells of probe **BTNA**.

References

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