

## Electronic Supplementary Information

### **Fluorescence-colorimetric dual-mode detection of cysteine in artificial urine with potential relevance to cervical cancer**

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# 1. Structural characterizations of probe SH-OH-NBD

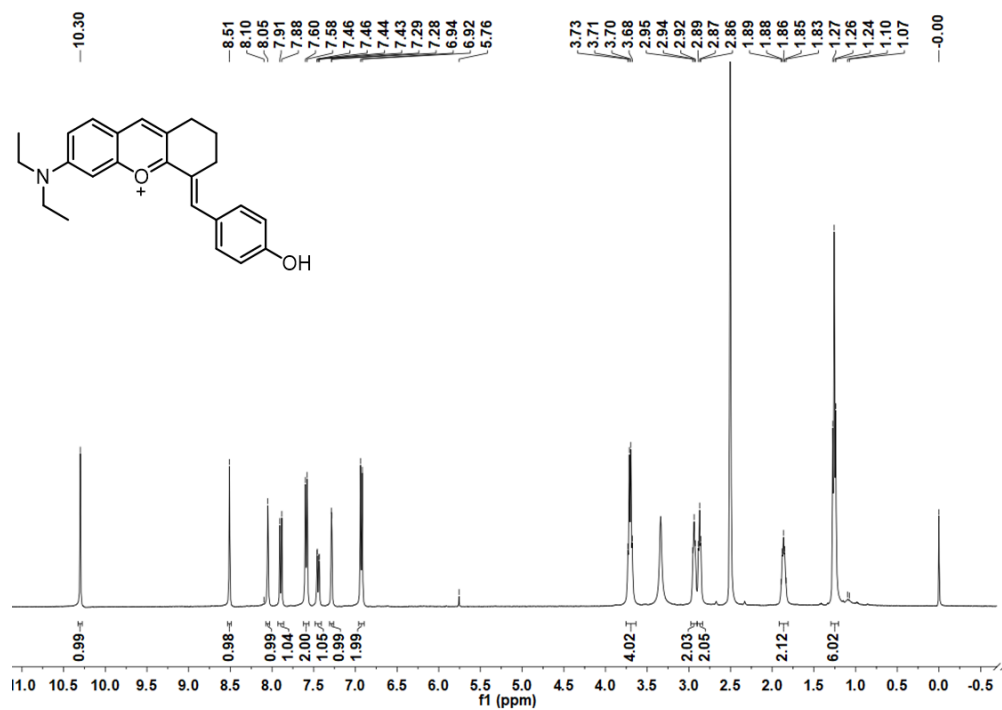


Fig. S1  $^1\text{H}$  NMR spectrum of intermediate SH-OH (400 MHz, DMSO- $d_6$ ).

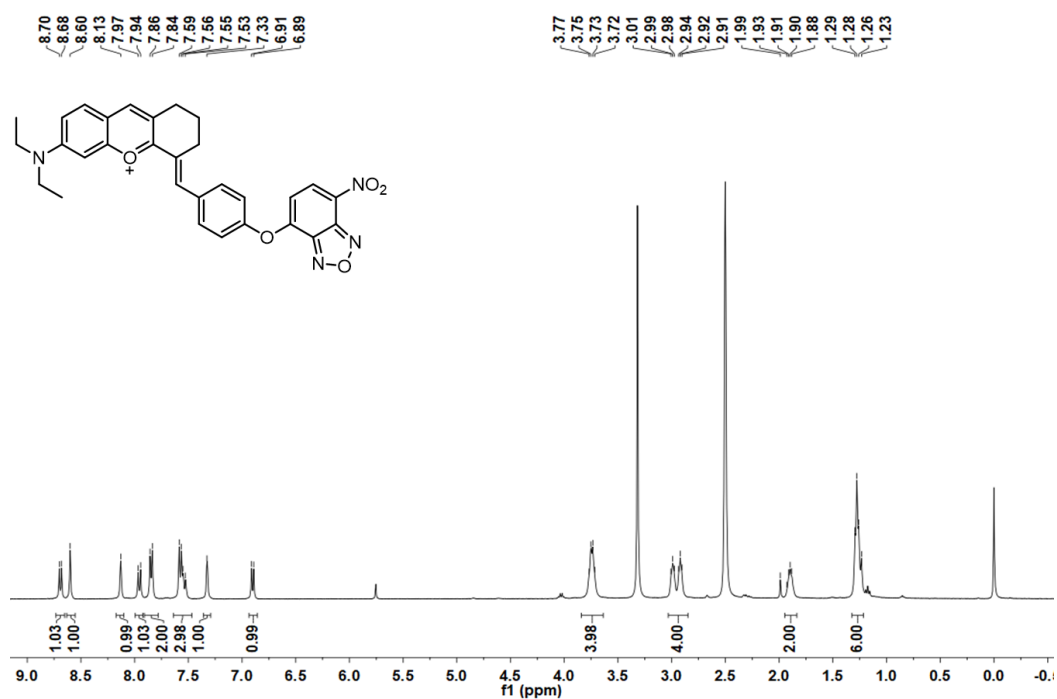
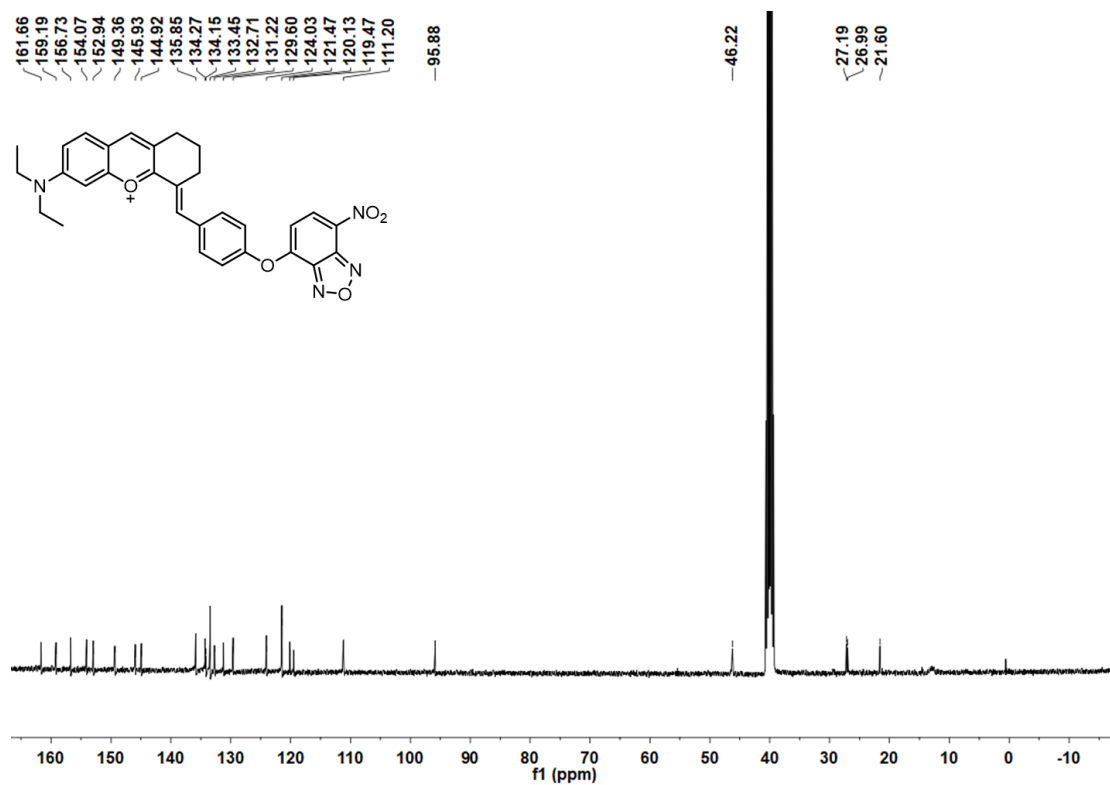
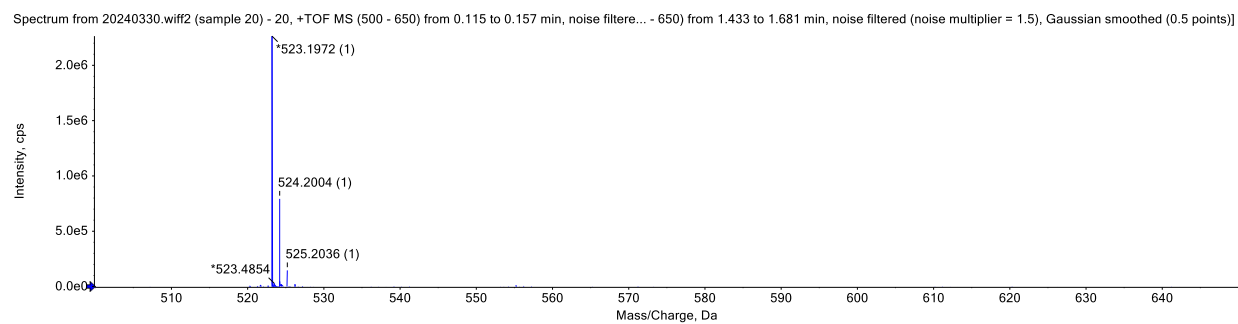


Fig. S2  $^1\text{H}$  NMR spectrum of SH-OH-NBD (400 MHz, DMSO- $d_6$ ).

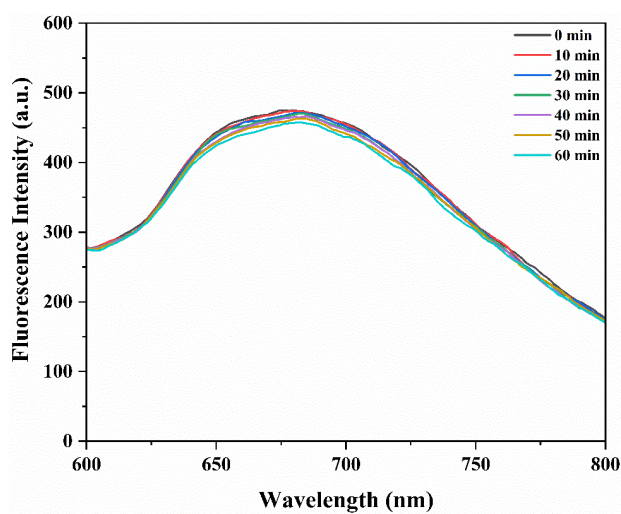


**Fig. S3** <sup>13</sup>C NMR spectrum of SH-OH-NBD (100 MHz, DMSO-*d*<sub>6</sub>).

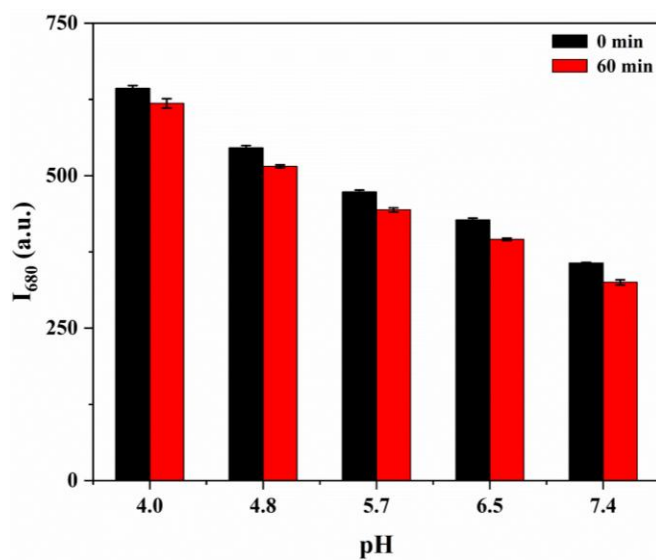


**Fig. S4** High resolution mass spectrometry of SH-OH-NBD.

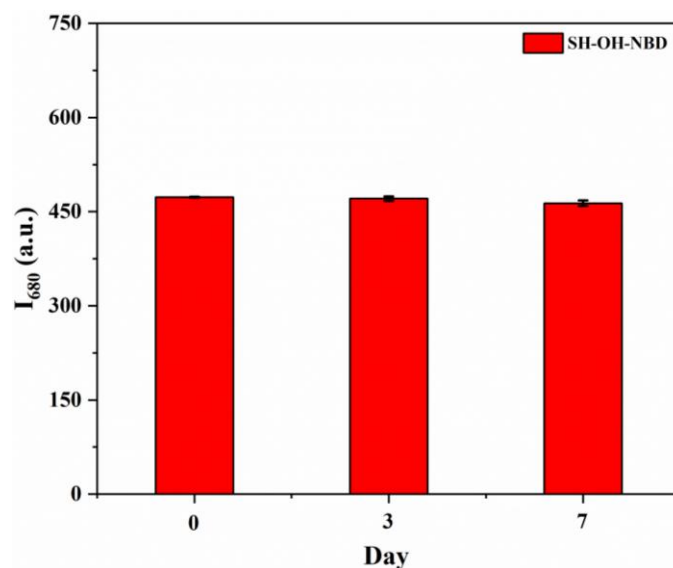
## 2. Spectral properties of probe SH-OH-NBD



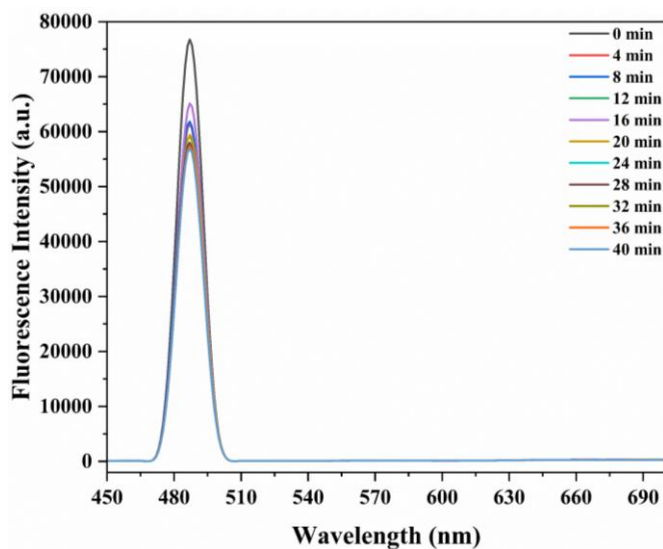
**Fig. S5** Time-dependent emission spectrum of SH-OH-NBD (10 μM) in artificial urine,  $\lambda_{\text{ex}}/\lambda_{\text{em}} = 556 \text{ nm}/680 \text{ nm}$ , slit width (ex/em) = 10 / 10 nm.



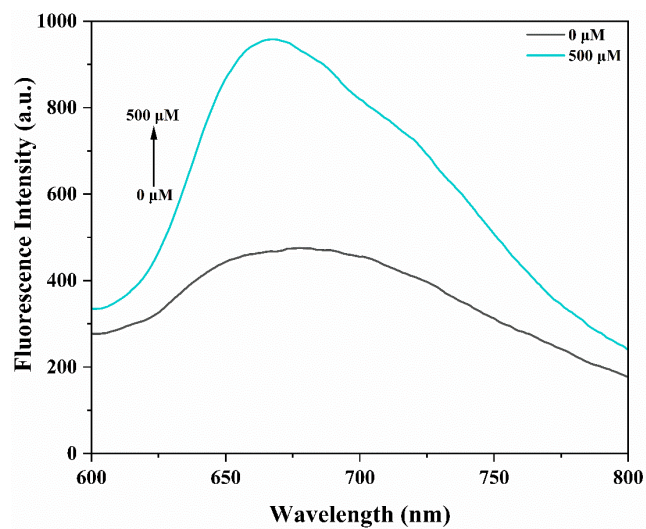
**Fig. S6** The fluorescence intensities of SH-OH-NBD (10 μM) before and after storage at 25°C for 60 min in artificial urines at different pH values (4.0, 4.8, 5.7, 6.5, 7.4),  $\lambda_{\text{ex}}/\lambda_{\text{em}} = 556 \text{ nm}/680 \text{ nm}$ , slit width (ex/em) = 10 / 10 nm.



**Fig. S7** The columnar fluorescence intensity of **SH-OH-NBD** (10  $\mu$ M) in artificial urine (pH = 5.7) at 25  $^{\circ}$ C. The day means a storage time of stock solution of **SH-OH-NBD** (1 mM) in DMSO at 25  $^{\circ}$ C.  $\lambda_{ex}/\lambda_{em}$  = 556 nm/680 nm, slit width (ex/em) = 10 / 10 nm.

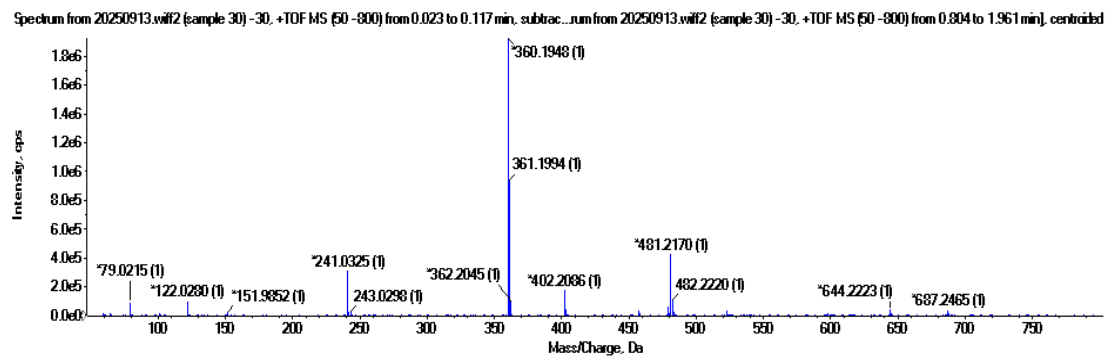


**Fig. S8** Time-dependent emission spectrum of **SH-OH-NBD** (10  $\mu$ M) in artificial urine,  $\lambda_{ex}/\lambda_{em}$  = 490 nm/567 nm, slit width (ex/em) = 10 / 10 nm.



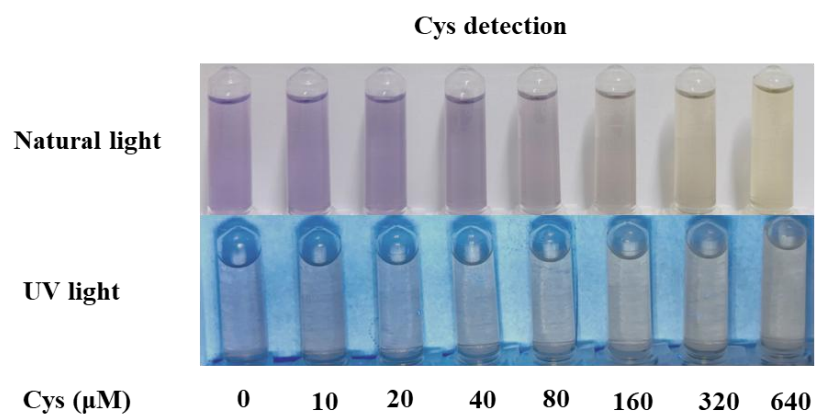
**Fig. S9** Emission spectrum of **SH-OH-NBD** (10  $\mu\text{M}$ ) before and after the addition of Cys (500  $\mu\text{M}$ ) in artificial urine,  $\lambda_{\text{ex}}/\lambda_{\text{em}} = 556 \text{ nm}/680 \text{ nm}$ , slit width (ex/em) = 10 / 10 nm.

### 3. Verification of sensing mechanism



**Fig. S10** High resolution mass spectrometry of **SH-OH-NBD** after the addition of Cys.

#### 4. Visual inspection of Cys in artificial urine



**Fig. S11** Color changes of **SH-OH-NBD** (20  $\mu\text{M}$ ) before and after the addition of increasing concentrations of Cys under natural light or ultraviolet radiation (365 nm).