Electronic Supplementary data For

A cancer cell-specific two-photon fluorescent probe for imaging hydrogen sulfide in living cells

Xuezhen Song, Baoli Dong, Xiuqi Kong, Chao Wang, Nan Zhang, Weiying Lin*

Institute of Fluorescent Probes for Biological Imaging, School of Chemistry and Chemical Engineering, School of Materials Science and Engineering, University of Jinan, Jinan, Shandong 250022, P.R. China

*Corresponding Author.
Tel.: +86 53182769108.
E-mail address: weijinglin2013@163.com.
Scheme S1. Proposed response mechanism of BN-H$_2$S to H$_2$S.

Fig. S1. HRMS study of the product of BN-H$_2$S with Na$_2$S (80 equiv) in PBS (pH 7.4, 20 mM, 5% MeOH) at room temperature.
Fig. S2. Absorption spectra of 5 μM BN-H$_2$S to various species in PBS buffer (pH 7.4, 20 mM, 5% MeOH).

Fig. S3. Fluorescence intensity at 544 nm of 5 μM BN-H$_2$S in absence and presence of 100μM Na$_2$S at different pH under excitation at 440 nm.
Fig. S4. Cytotoxicity of **BN-H$_2$S** in HeLa cells (left) and NIH 3T3 cells (right). The cell viability was measured by a standard MTT assay.

![Cytotoxicity of BN-H$_2$S in HeLa cells and NIH 3T3 cells](image)

Fig. S5. (A) Fluorescence images of HeLa cells treated with 10 μM **BN-H$_2$S**. (B) Fluorescence images of HeLa cells treated with 10 μM **BN-H$_2$S** and 100 μM Na$_2$S. (C) Fluorescence images of NIH 3T3 cells treated with 10 μM **BN-H$_2$S**. (D) Fluorescence images of NIH 3T3 cells treated with 10 μM **BN-H$_2$S** and 100 μM Na$_2$S. One-photon (OP) imaging: emission at 500-550 nm with excitation at 488 nm; Two-photon (TP) imaging: emission at 500-550 nm with excitation at 760 nm. Scale bar = 20 μm.

![Fluorescence images of HeLa and NIH 3T3 cells](image)
**Fig. S6.** $^1$H NMR spectrum (DMSO-$d_6$) of compound 2.

**Fig. S7.** $^{13}$C NMR spectrum (DMSO-$d_6$) of compound 2.
Fig. S8. $^1$H NMR spectrum (DMSO-$d_6$) of compound BN-H$_2$S

Fig. S9. $^{13}$C NMR spectrum (DMSO-$d_6$) of compound BN-H$_2$S
Fig. S10. $^1$H NMR spectrum (DMSO-$d_6$) of compound BN-NH$_2$

Fig. S11. $^{13}$C NMR spectrum (DMSO-$d_6$) of compound BN-NH$_2$