Supplementary Information

A Smartphone based Device for the Detection of Sulfane Sulfurs in Biological Systems

Deshka L. Neill,[†] Yu-Chung Chang,[‡] Wei Chen,[†,*] Lei Li,[‡,*] Ming Xian[†,*]

[†]Department of Chemistry, Washington State University, Pullman, WA 99164, USA

[‡]School of Mechanical and Materials Engineering, Washington State University, Pullman, WA 99164, USA

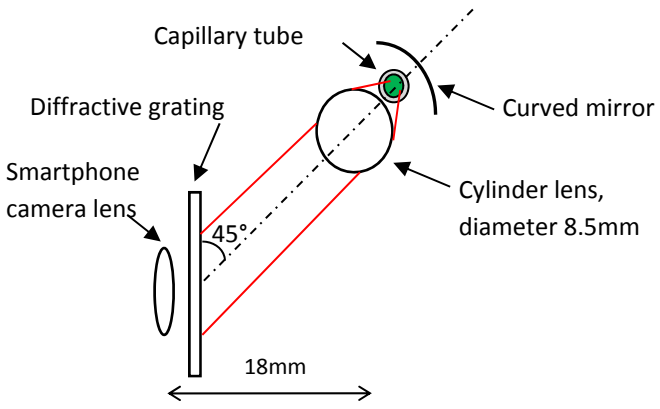


Figure S1. Cross-section view of the optical system. (The capillary tube, cylinder lens, and curved mirror are aligned on the same optical axis, which has a 45° with the normal direction of the smartphone camera). The capillary tube is in close contact with the cylinder lens in order to collect more fluorescent light.

pH Effects on fluorescence changes of SSP5 toward PSD: the protocol used in this study was the same as described in Materials and Methods in main text. The results were shown in Figure S2.

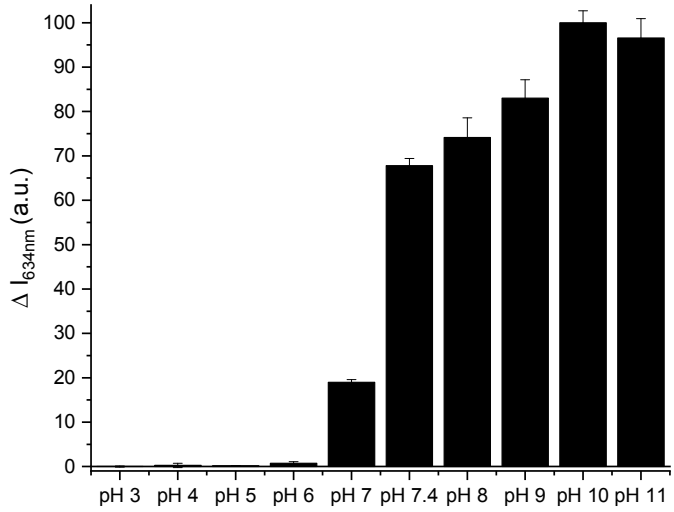


Figure S2: Fluorescence intensity change of 10 μM SSP5 at different pH in the presence of PSD (50 μM).

Effects of metal ions on fluorescence changes of SSP5: the protocol used in this study was the same as described in Materials and Methods in main text. The results were shown in Figure S3.

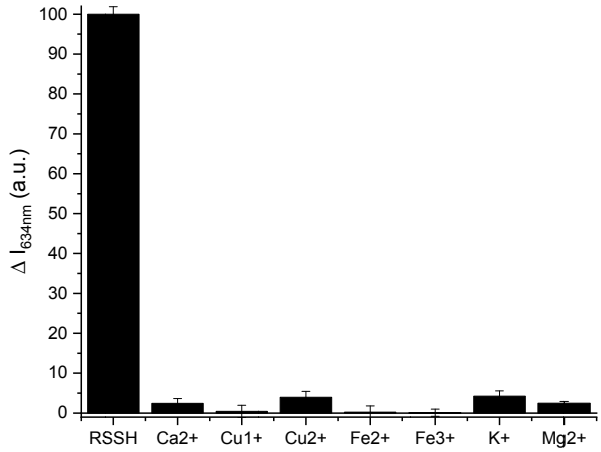


Figure S3: Fluorescence intensity change of SSP5 (10 μM) in the presence of various metal ions. Data collected using Ex/Em = 582/634 nm. (1) 50 μM PSD; (2) 2 mM Ca^{2+}; (3) 10 μM Cu^{+}; (4) 10 μM Cu^{2+}; (5) 10 μM Fe^{2+}; (6) 10 μM Fe^{3+}; (7) 150 mM K^{+}; (8) 2 mM Mg^{2+}

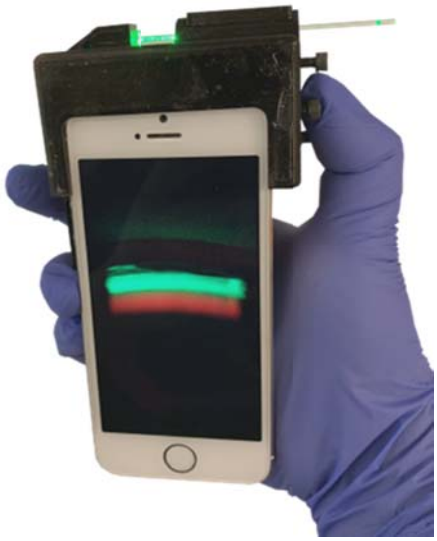
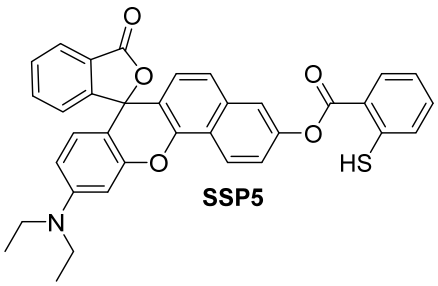


Figure S4. The photo of smartphone based device (S4A) measuring the fluorescence intensity of SSP5 in the presence of sulfane sulfurs.

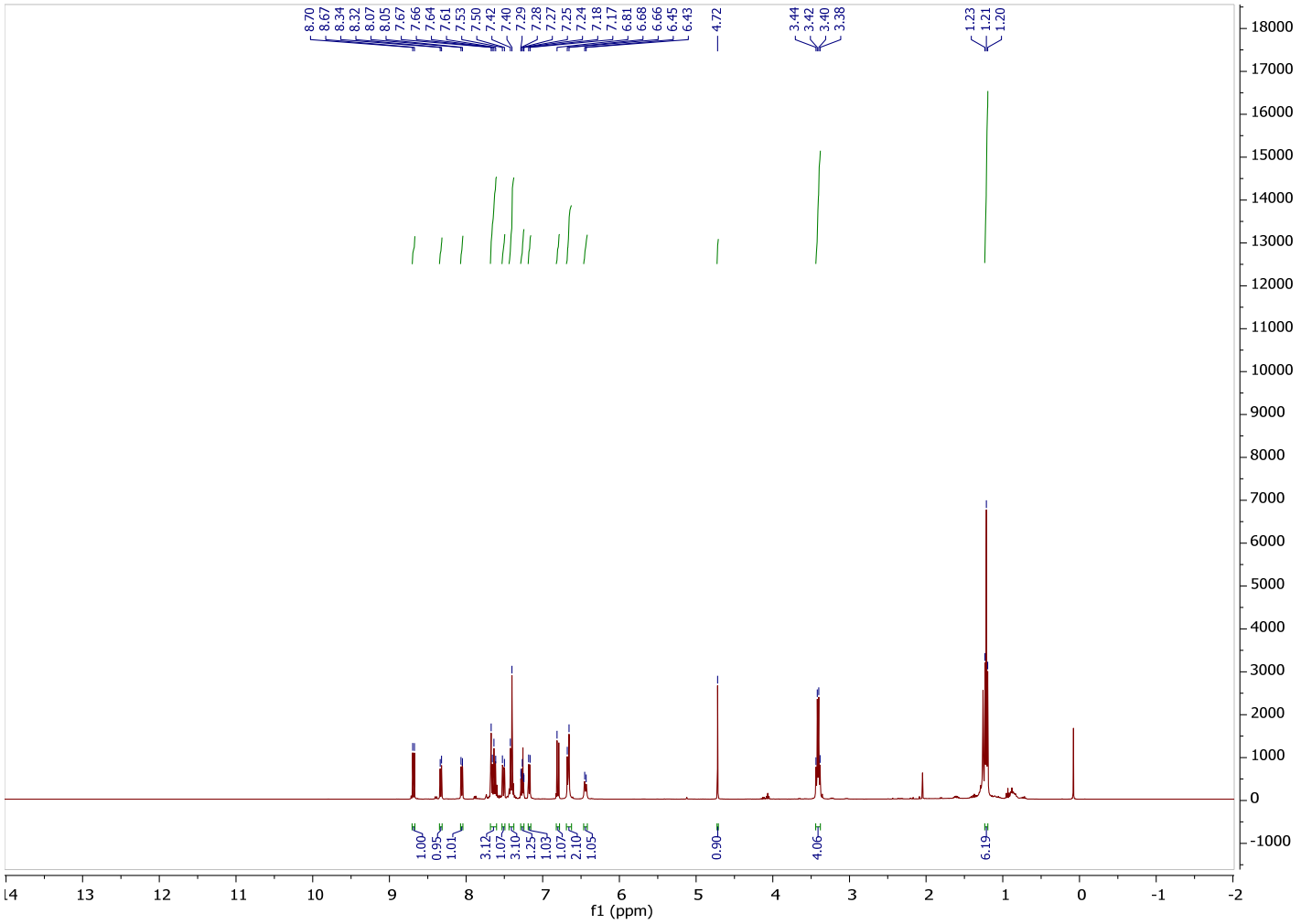
Table S1. Determination of PSD content in urine system using SSP5

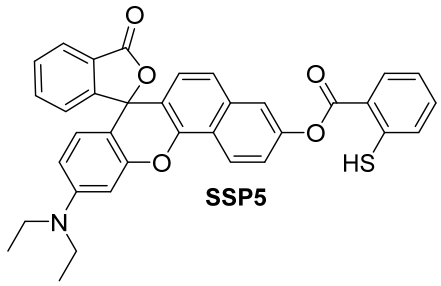
PSD added (μM)	**PSD found by SSP5 (μM)**	**Recovery(%)**
12 μM	11.18 ± 1.57 (μM)	93.19 ± 0.13
18 μM	14.83 ± 1.93 (μM)	82.38 ± 0.11
25 μM	22.97 ± 1.16 (μM)	91.88 ± 0.05



SSP5

^{1}H NMR (400 MHz, CD_3Cl)





SSP5

^{13}C NMR (151 MHz, $CDCl_3$)