Electronic Supplementary Information for:

**Aqueous synthesis of highly fluorescent and stable Cu-In-S/ZnS core/shell nanocrystals for cell imaging**

Chun-Nan Zhu, Dong-Yun Zheng, Hui-Min Cao, Shan-Ying Zhu and Xiao-Jun Liu*

Hubei Key Laboratory of Medical Information Analysis and Tumor Diagnosis & Treatment, Key Laboratory of Cognitive Science (State Ethnic Affairs Commission), and College of Biomedical Engineering, South-Central University for Nationalities, Wuhan 430074, P. R. China.

*Corresponding author: Xiao-Jun Liu (E-mail: liuxj@mail.scuec.edu.cn)

**Fig. S1** FT-IR spectra of glutathione, Cu-In-S NCs, and Cu-In-S/ZnS NCs. The N-H stretching vibration and wagging vibration peaks appeared at 3252 and 693 cm\(^{-1}\), respectively. The peaks at 1645, 1535, and 1385 cm\(^{-1}\) can be attributed to amide I, amide II, and amide III bands. For Cu-In-S NCs and Cu-In-S/ZnS NCs, the characteristic peak of free thiol groups at 2523 cm\(^{-1}\) disappeared,\(^1,2\) which confirmed that thiol groups in glutathione have covalently bound with the metal atoms on the surface of NCs. Moreover, the C=O stretching vibration of -COOH shifted from 1720 to 1605 cm\(^{-1}\), which can be ascribed to the deprotonation of -COOH.\(^3\)
Fig. S2 Comparison of FL intensity of the products with different adding sequence of first Zn and then S precursors (red line), and first S and then Zn precursors (blue line).

Fig. S3 FL emission spectra of Cu-In-S/ZnS NCs with different addition times of S and Zn precursors.
**Fig. S4** Integrated FL intensity vs. optical density (absorbance) of Cu-In-S/ZnS NCs in water (A) and R6G in ethanol (B).

**Fig. S5** FL emission spectra of Cu-In-S/ZnS NCs with different Cu/In raw ratios.
Fig. S6 Bright-field images, FL images, and the merged images of CAL-27 cells after the incubation with FITC-WGA (A, B, and C) and FITC (D, E, and F). CAL-27 cells showed strong green FL after treated with FITC-WGA, and almost no green FL with FITC, indicating abundant WGA receptors on the membrane of CAL-27 cells.

Fig. S7 Agarose gel electrophoresis result of WGA-modified Cu-In-S/ZnS NCs and Cu-In-S/ZnS NCs at the mode of FL field. The dashed line indicates the location of the loading wells.
References