Electronic Supporting Information

For

pH-dependent photoluminescence “switch-on” nanosensor composed of silver nanoparticles and nitrogen and sulphur co-doped carbon dots for discriminative detection of biothiols.

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**Fig.S1** HRTEM image of the as-prepared N, S-CDs, the inset showing representative lattice fringes.
Fig.S2 PL spectra (recorded from 280 to 390 nm with 10 nm increment) of the N, S-CDs.
Fig. S3 The extinction spectra of the as-prepared AgNPs.
Fig. S4 FT-IR spectra of citric acid (CA), L-cysteine (Cys) and the obtained N, S-CDs.
Fig. S5 The XPS survey scan of the N, S-CDs.
Fig. S6 (a) The PL response of the N, S-CDs/AgNPs suspension towards different concentrations of Cys at pH 3.0; (b) The PL response of the N, S-CDs/AgNPs suspension towards different concentrations of Hcy at pH 3.0. Concentration: N, S-CDs, 200 μg mL⁻¹; AgNPs, 1.2 mM.
**Fig.S7** Effect of pH value on PL of the N, S-CDs/AgNPs in the absence and presence of different kinds of biothiols. Concentration: N, S-CDs, 200 \( \mu \text{g mL}^{-1} \); AgNPs, 1.2 mM; all the biothiols, 100.0 \( \mu \text{M} \). The error bars are obtained via three independent experiments.
Fig.S8 (a) The PL response of the N, S-CDs/AgNPs suspension towards different kinds of biothiols at pH 3.0; (b) the PL response of the N, S-CDs/AgNPs suspension towards different kinds of biothiols at pH 7.0. Concentration: N, S-CDs, 200 μg mL⁻¹; AgNPs, 1.2 mM; all the biothiols, 100.0 μM.
Fig.S9 The calibration curves for GSH, Cys and Hcy at pH 3.0. Concentration: N, S-CDs, 200.0 μg mL⁻¹; AgNPs, 1.2 mM. The error bars are obtained via three independent experiments.