## Supporting Information

## Control of pH for separated quantitation of nitrite and cyanide

## ions using photoluminescent copper nanoclusters

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**Figure S1.** Effects of pH on the detection of (a)  $NO_2^-$  (50  $\mu$ M) and (b)  $CN^-$  (10  $\mu$ M) using TA-Cu NCs aggregates (0.025X) at 420 nm when excited at 338 nm.



**Figure S2.** ESI-MS spectra of TA-Cu NCs aggregates in the presence of (a) 20 mM  $NO_2^-$  at pH 5.0 and (b) 10 mM CN<sup>-</sup> at pH 8.0.



**Figure S3.** Absorption spectra of TA-Cu NCs aggregates in the absence of (a) and presence of (b)  $0.5 \text{ mM NO}_2^-$  ions at pH 5.0 and in the absence of (c) and presence of (d) 1 mM CN<sup>-</sup> ions at pH 8.0. Curve i and ii are for the solutions without and with containing 50 mM iodide, respectively.



**Figure S4**. PL decay curves and corresponding lifetimes determined from biexponential fitting of TA-Cu NC aggregates in the absence and presence of  $NO_2^-$  or  $CN^-$ . (a) and (c) for TA-Cu NC aggregates at pH 5.0 in the absence (i) and presence of (ii) 0.5 mM and (iii) 20 mM  $NO_2^-$ . (b) and (d) for TA-Cu NC aggregates at pH 8.0 in the absence (iv) and presence of (v) 1 mM and (vi) 10 mM  $CN^-$ .



**Figure S5**. Quantitation of  $NO_2^-$  ions in standard solutions in the (a) absence and presence of (b) 0.5, (c) 0.7, and (d) 1.0  $\mu$ M CN<sup>-</sup> ions using TA-Cu NC aggregates at pH 5.0. Concentration of TA-Cu NC aggregates: 0.025X.



**Figure S6**. Quantitation of CN<sup>-</sup> ions in standard solutions in the (a) absence and presence of (b) 15, (c) 30, and (d) 50  $\mu$ M NO<sub>2</sub><sup>-</sup> ions using TA-Cu NC aggregates at pH 8.0. Concentration of TA-Cu NC aggregates: 0.025X.