Electronic Supplementary Material

Glutathione-directed synthesis of Cr(VI)- and temperature-responsive fluorescent copper nanoclusters and their applications in cellular imaging

Lingcan Kong,[a*] Xuefeng Chu,[b] Wenwei Liu,[a] Yuyang Yao,[a] Pengfei Zhu[a] and Xia Ling[a*]

[a]*Wuxi Center for Disease Control and Prevention, Wuxi 214023, P.R. China*

[b]*Department of Basic Science, Jilin Jianzhu University, Changchun 130118,*

P. R. China

Email: konglingcan2010@163.com

wxcdclingxia@sina.com

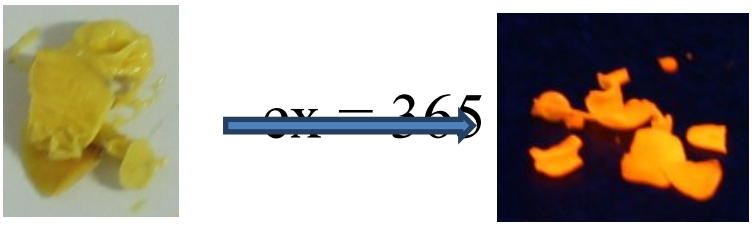

Figure S1 The solid of as-prepared Cu NCs at the room temperature (left) and under a 365 nm UV light source (right).

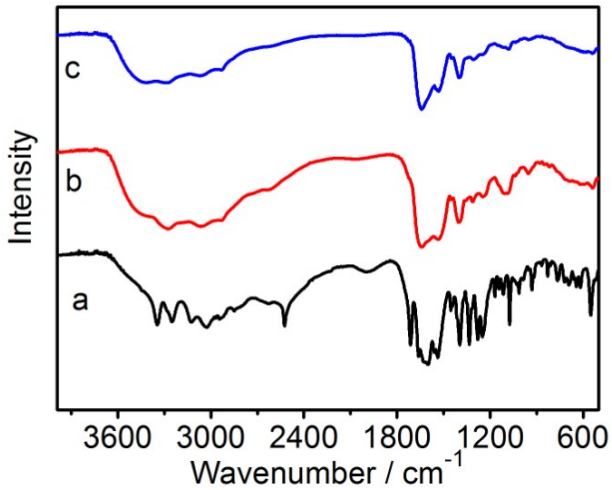

Figure S2 The FT-IR spectra of pure glutathione (a) and as-prepared Cu NCs (b) which confirm that the surface of as-prepared Cu NCs was protected by glutathione. (c) The FT-IR spectra of freeze-dried Cu NCs solid prepared by Cu NCs aqueous solution stirring for five minutes upon addition $K_2Cr_2O_7$ to 36 μmol·L^{-1} and then freeze-dried.

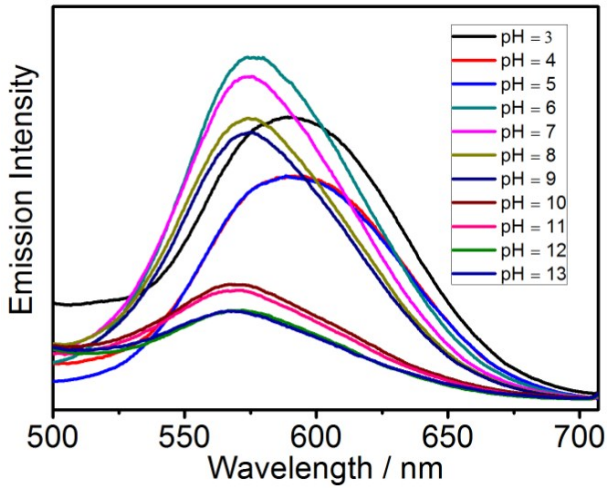

Figure S3 Fluorescence spectra of Cu NCs responses to pH ranging from 3 to 13.

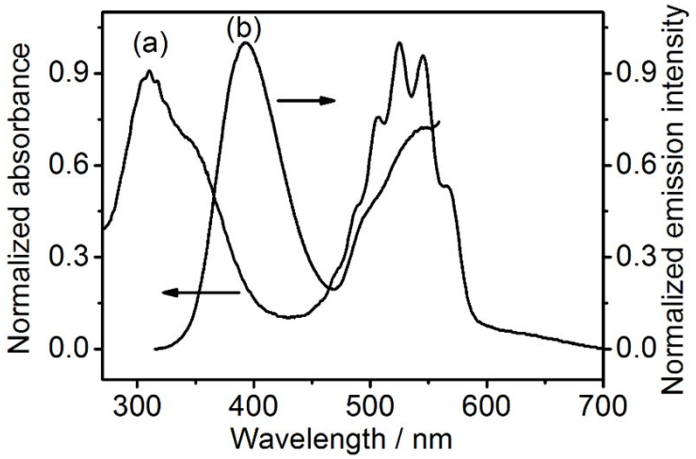

Figure S4 a) The normalized absorbance spectrum of potassium permanganate aqueous solution. b) The normalized excitation spectrum of Cu NCs aqueous solution.

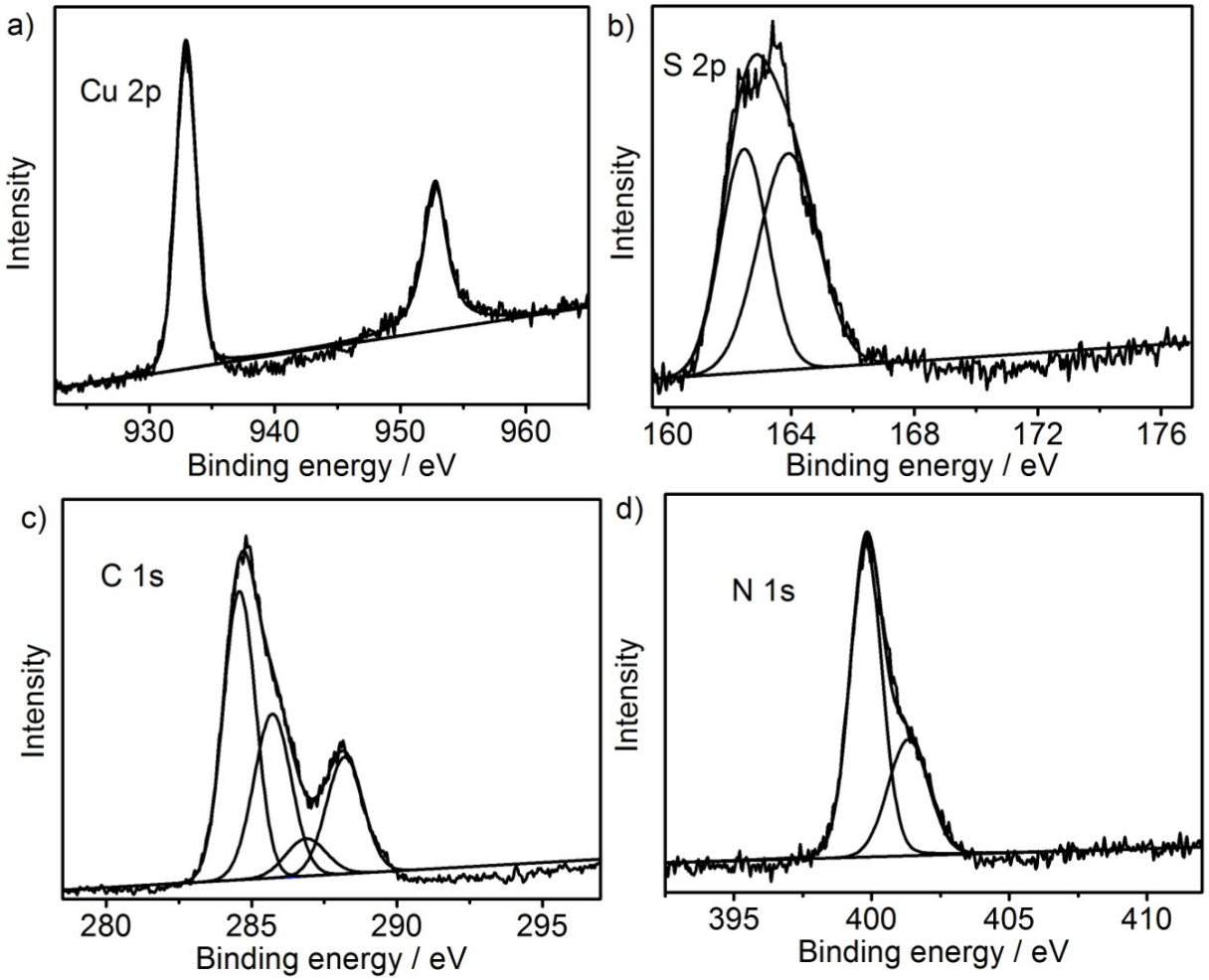

Figure S5 XPS spectra of as-prepared Cu NCs prepared by Cu NCs aqueous solution stirring for five minutes upon addition $K_2Cr_2O_7$ to 36 μmol·L^{-1} and then freeze-dried: a) Cu 2p; b) S 2p; c) C 1s; d) N 1s.

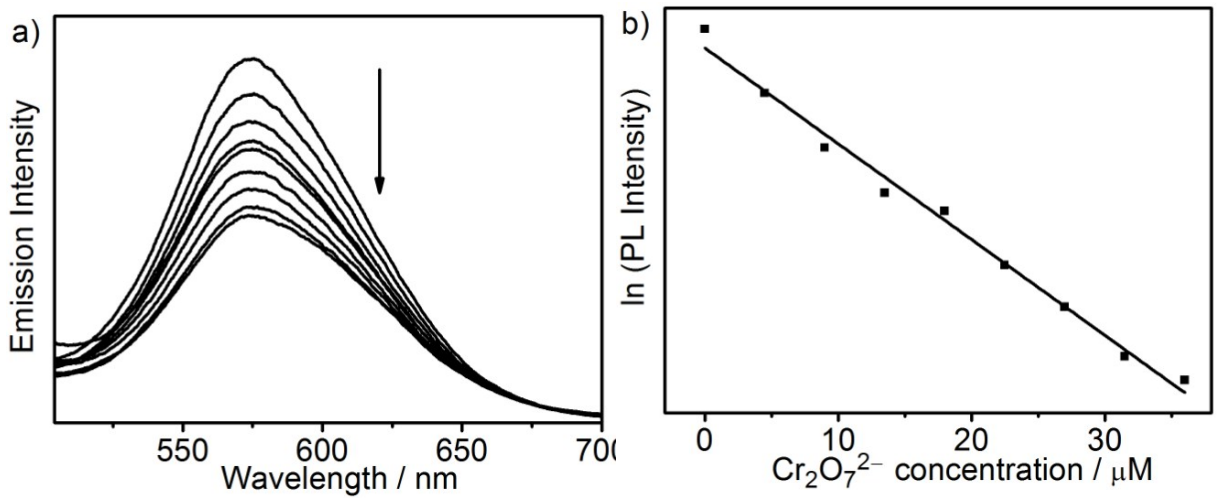

Figure S6 a) Emission spectral changes of Cu NCs in tap water upon addition of different amounts of $Cr_2O_7^{2-}$ ions (0, 4.5, 9, 13.5, 18, 22.5, 27, 31.5, 36 μmol·L^{-1}). b) Linear relationship between the logarithm of emission intensity and the concentration of $Cr_2O_7^{2-}$ ions.

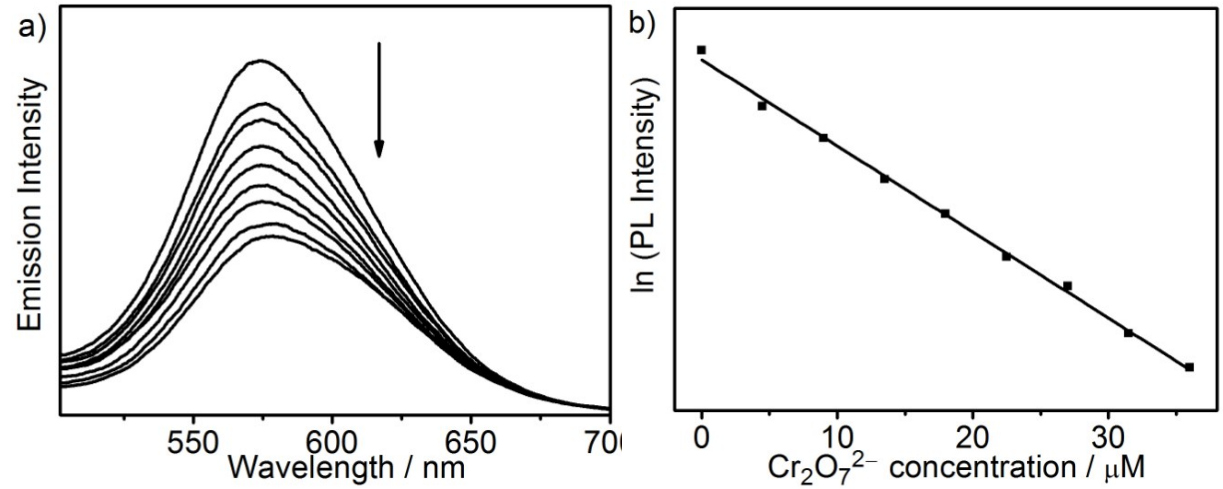

Figure S7 a) Emission spectral changes of Cu NCs in mineral water upon addition of different amounts of $Cr_2O_7^{2-}$ ions (0, 4.5, 9, 13.5, 18, 22.5, 27, 31.5, 36 μmol·L^{-1}). b) Linear relationship between the logarithm of emission intensity and the concentration of $Cr_2O_7^{2-}$ ions.

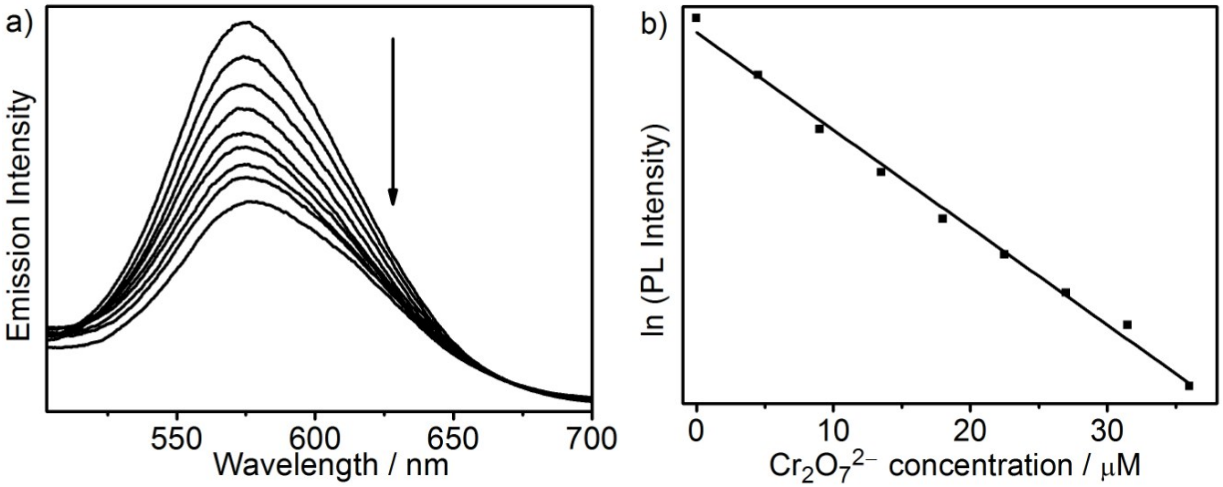

Figure S8 a) Emission spectral changes of Cu NCs in Taihu lake water upon addition of different

amounts of $Cr_2O_7^{2-}$ ions (0, 4.5, 9, 13.5, 18, 22.5, 27, 31.5, 36 μmol·L^{-1}). b) Linear relationship between the logarithm of emission intensity and the concentration of $Cr_2O_7^{2-}$ ions.

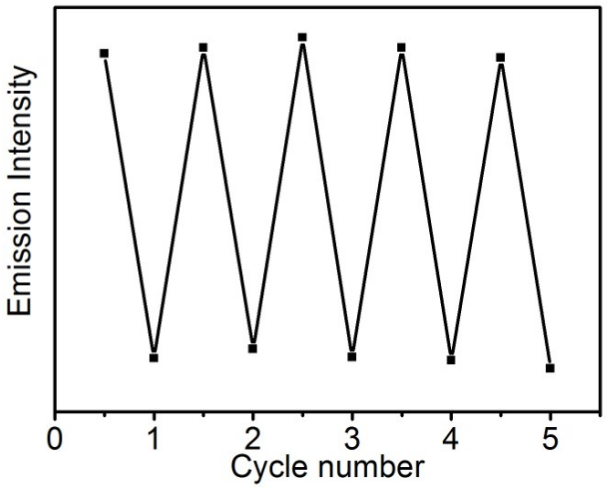

Figure S9 Emission intensity changes upon alternating temperatures between 288 K and 313 K.