Supporting Information

Synthesis of photoluminescent carbon dots for the detection of cobalt ions

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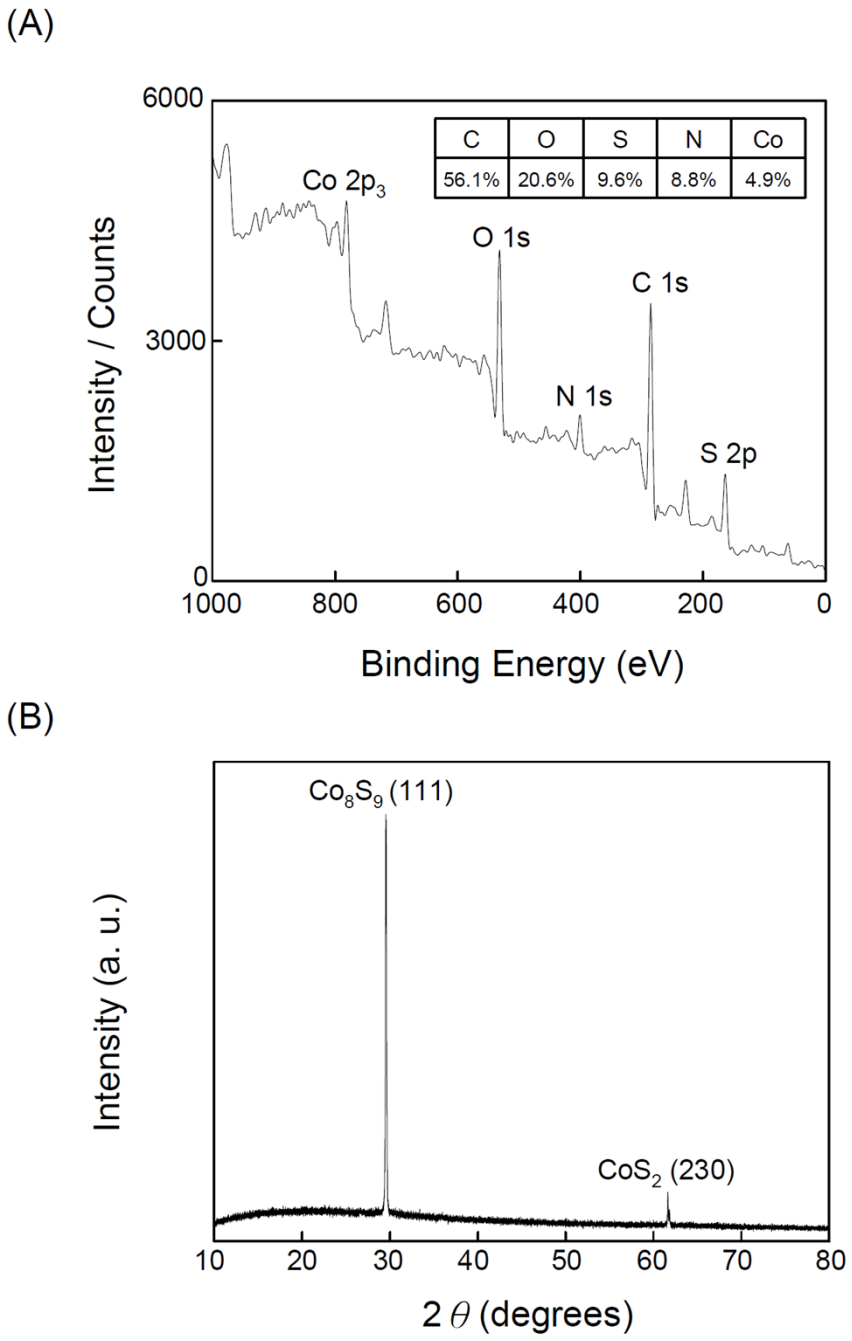

Fig. S1. (A) XPS full scan spectrum and (B) XRD pattern of as-prepared C-dots (17 μg mL^{-1}) in sodium phosphate buffer (10 mM, pH 9.0) in the presence of 10 μM Co^{2+} ions. Other conditions were the same as those described in Fig. 1.

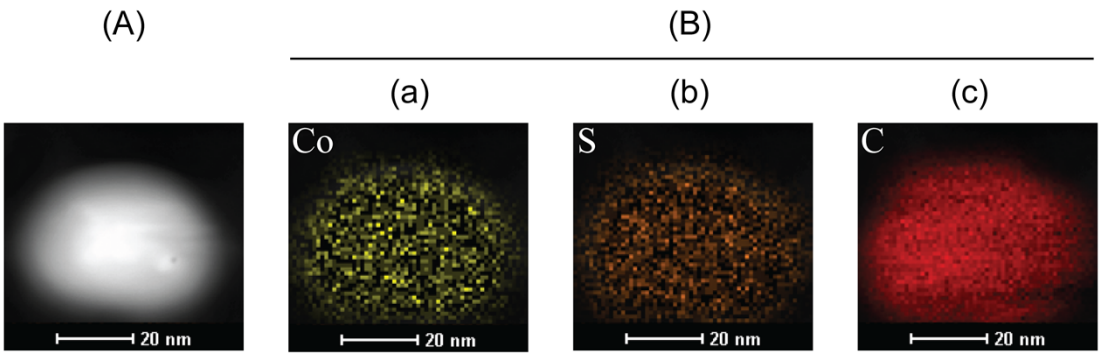

Fig. S2. (A) A representative HAADF-STEM image of one C-dots/Co_xS_y nanomaterial and (B) EDX elemental mappings of (a) cobalt, (b) sulfur, and (c) carbon in a representative aggregate of C-dots/Co_xS_y. Other conditions were the same as those described in Fig. 1.

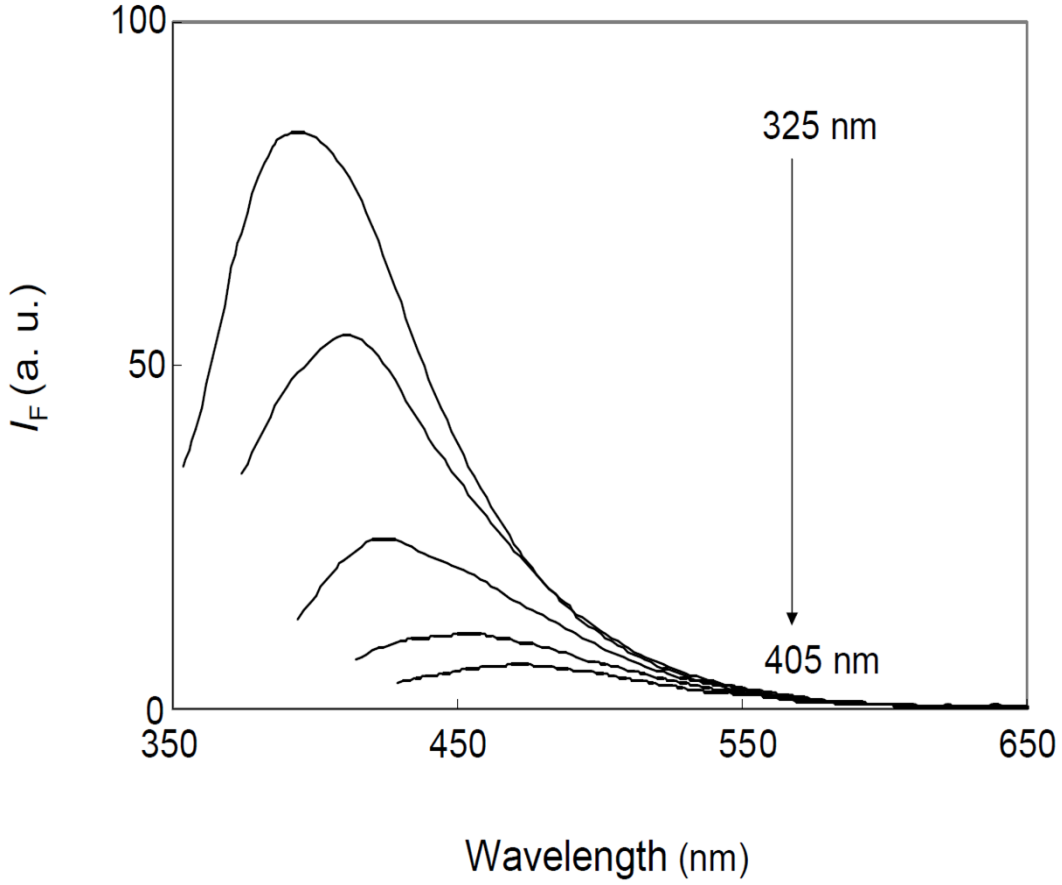

Fig. S3. PL emission spectra (excitation wavelength from 325 to 405 nm in 20 nm increments) of as-prepared C-dots (17 μg mL^{-1}) in sodium phosphate buffer (10 mM, pH 9.0). Other conditions were the same as those described in Fig. 1.

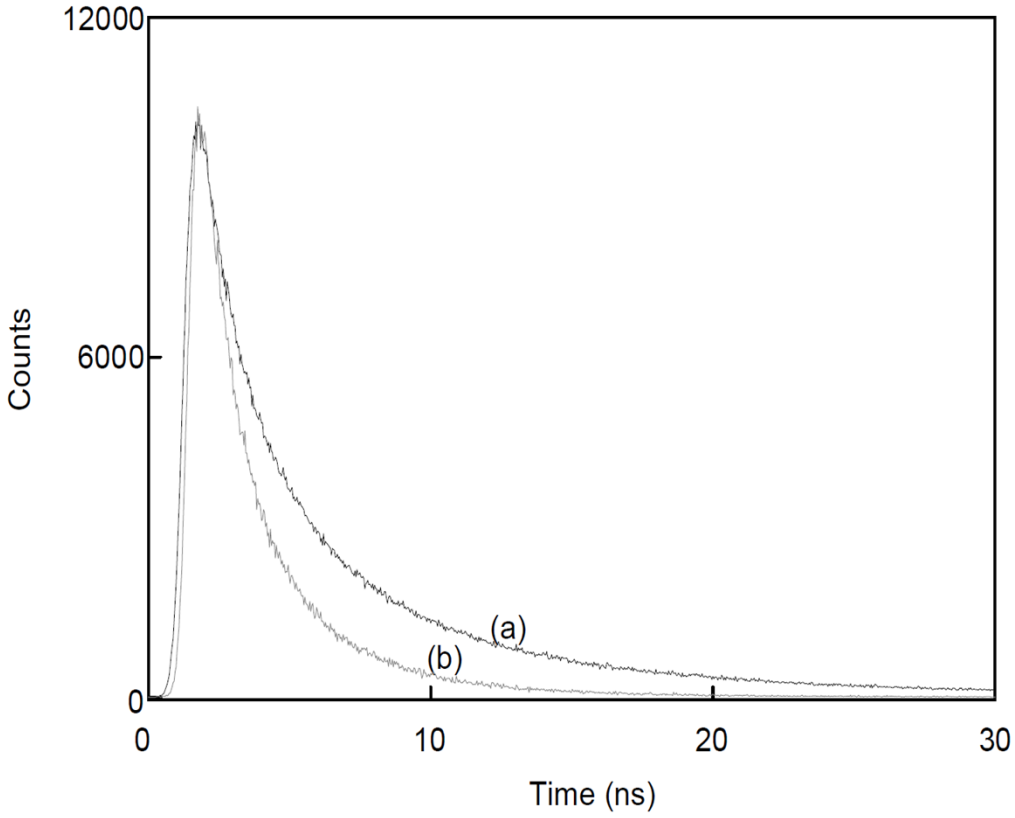

Fig. S4. PL lifetimes of the C-dots (17 μg mL^{-1}) in the (a) absence and (b) presence of Co^{2+} ions (10 μM) in sodium phosphate buffer (10 mM, pH 9.0). The data was obtained after excitation at 355 nm.

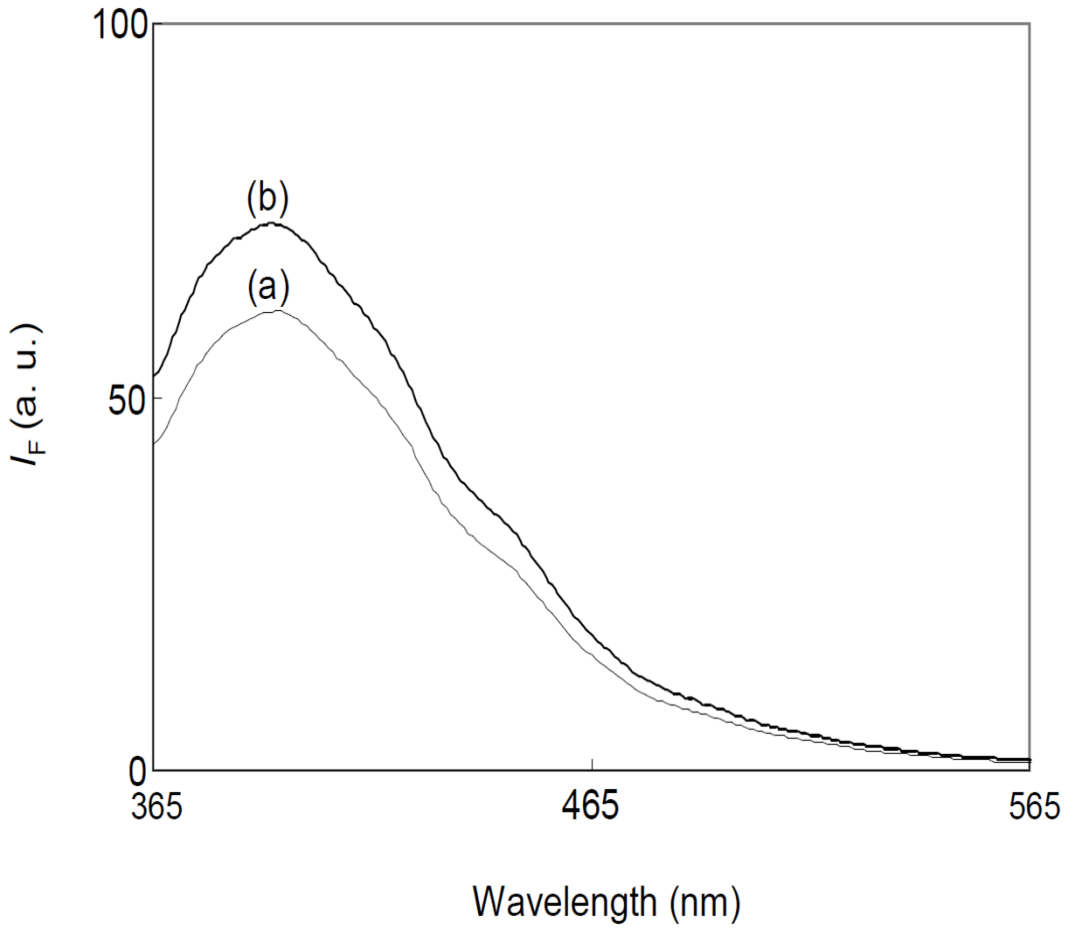

Fig. S5. PL spectra of as-prepared C-dots (17 μg mL^{-1}) in sodium phosphate buffer (10 mM, pH 9.0) in the presence of 10 μM Co^{2+} ions (a) before and (b) after adding 1 mM EDTA. Other conditions were the same as those described in Fig. 1.

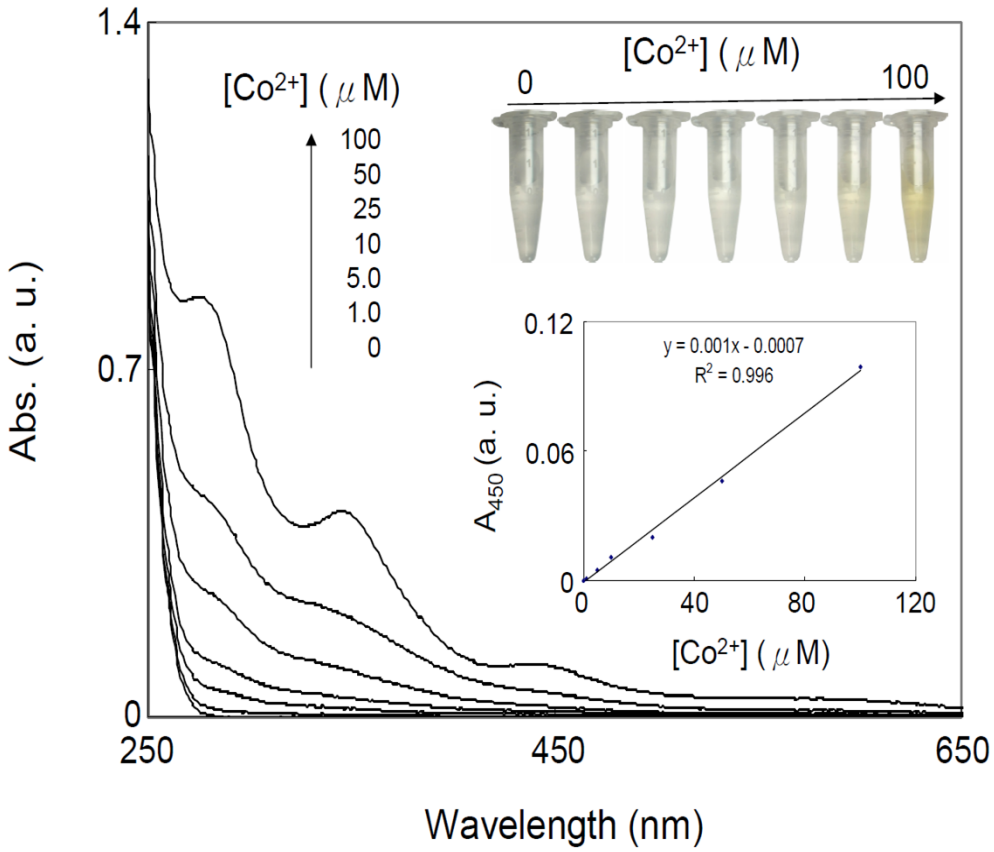

Fig. S6. UV-Vis absorption spectra of sodium phosphate solutions (10 mM, pH 9.0) containing cysteine (5 mM) in the presence of Co^{2+} ions (0–100 μM). Inset: (Upper) photograph of the solutions; (Down) Plot of the absorbance at 450 nm (A_{450}) of the solutions against the concentration of Co^{2+} ions.