

**Facile synthesis of the nitrogen and sulfur co-doped carbon dots
for multiple sensing capacities: Alkaline fluorescence
enhancement effect, temperature sensing, and selective detection
of Fe³⁺ ions**

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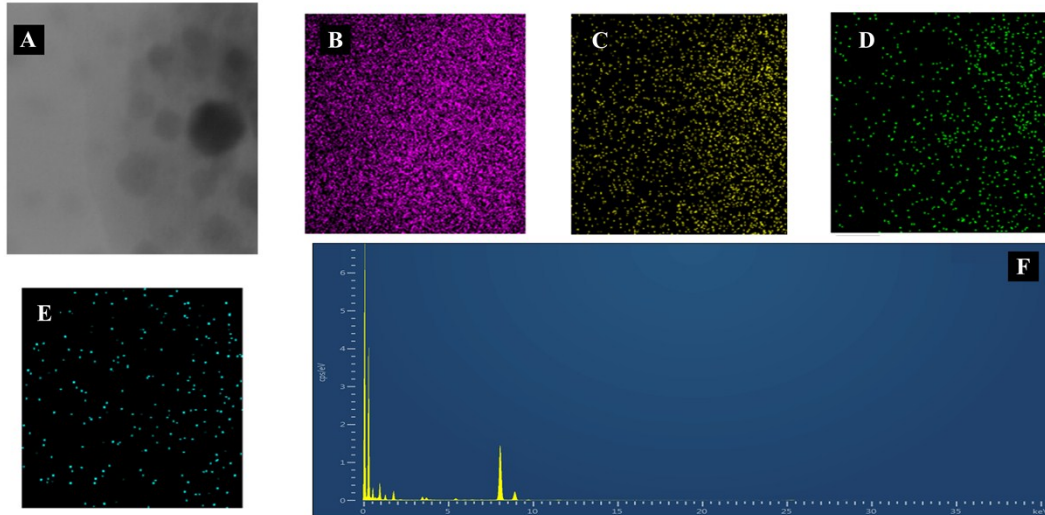


Fig.S1. (A) High angle annular dark field scanning transmission electron microscopy (HAADF-STEM) image and the corresponding EDAX elemental mapping of (B) carbon, (C) oxygen, (D) nitrogen, (E) sulphur and (F) EDAX spectrum.

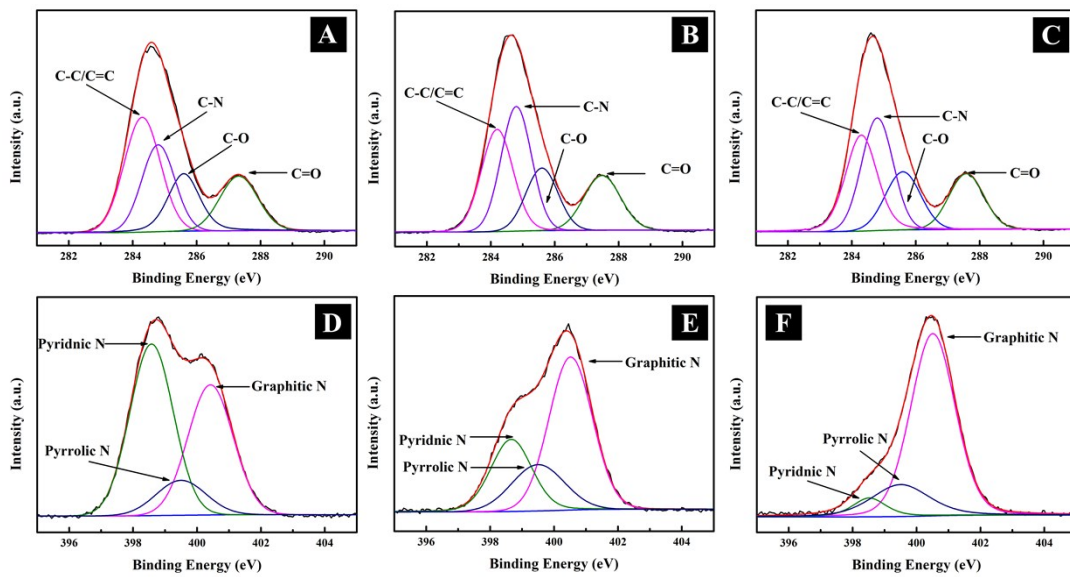


Fig.S2. High-resolution XPS C1s and N1s spectra of the three selected C-dots samples. (A) C1s and (D) N1s spectra of the C-dots (1:0.5); (B) C1s and (E) N1s spectra of the C-dots (1:1); (C) C1s and (E) N1s spectra of the C-dots (1:2).

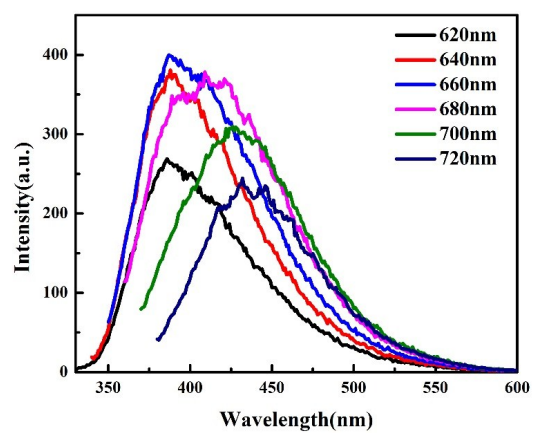


Fig. S3. Up-conversion emission spectra of C-dots under different excitation wavelengths.