

Supporting Information

A novel dual-emission fluorescence probe based on CDs and Eu³⁺ functionalized UiO-66-(COOH)₂ hybrid for visual monitoring Cu²⁺

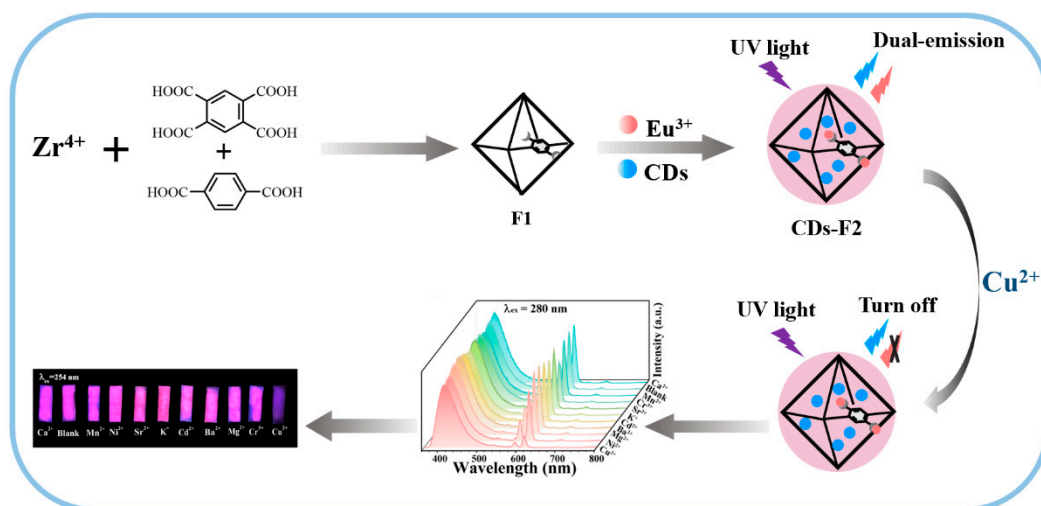
Jie Che ¹, Xin Jiang ¹, Yangchun Fan ¹, Mingfeng Li ¹, Xuejuan Zhang ², Daojiang Gao ¹, Zhanlei Ning ^{1,*} and Hongda Li ^{3,*}

¹ College of Chemistry and Materials Science, Sichuan Normal University, Chengdu 610068, China

² The Experiment Center, Shandong Police College, Jinan 250014, China

³ Liuzhou Key Laboratory for New Energy Vehicle Power Lithium Battery, School of Electronic Engineering, Guangxi University of Science and Technology, Liuzhou 545006, China

* Correspondence: zlning@sicnu.edu.cn (Z.N.); hdli@gxust.edu.cn (H.L.); Tel.: +86-28-84760802 (Z.N.)



Scheme S1. Schematic diagram of the preparation process and application of CDs-F2.

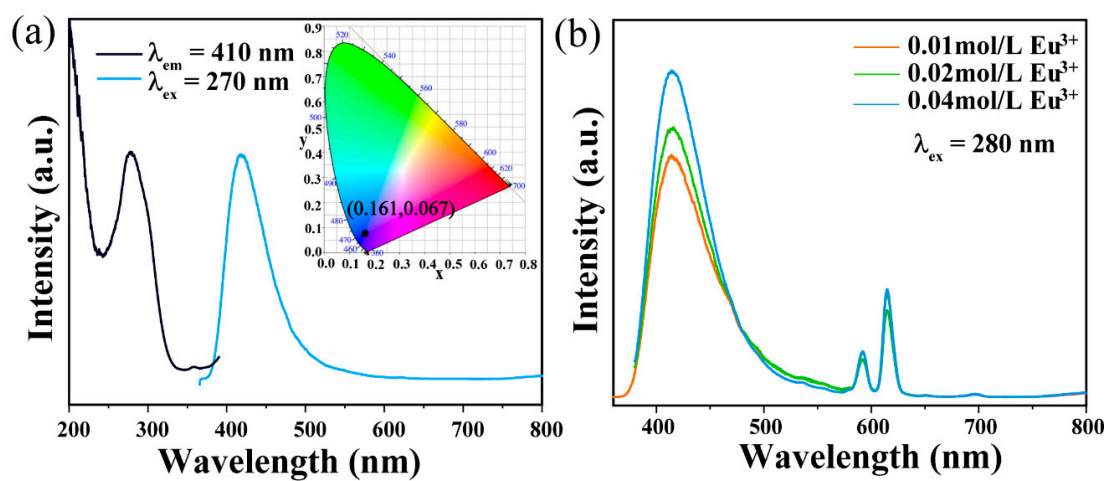


Fig. S1 (a) PL spectra of F1; (b) Emission of F2 with different doped content of Eu^{3+} .

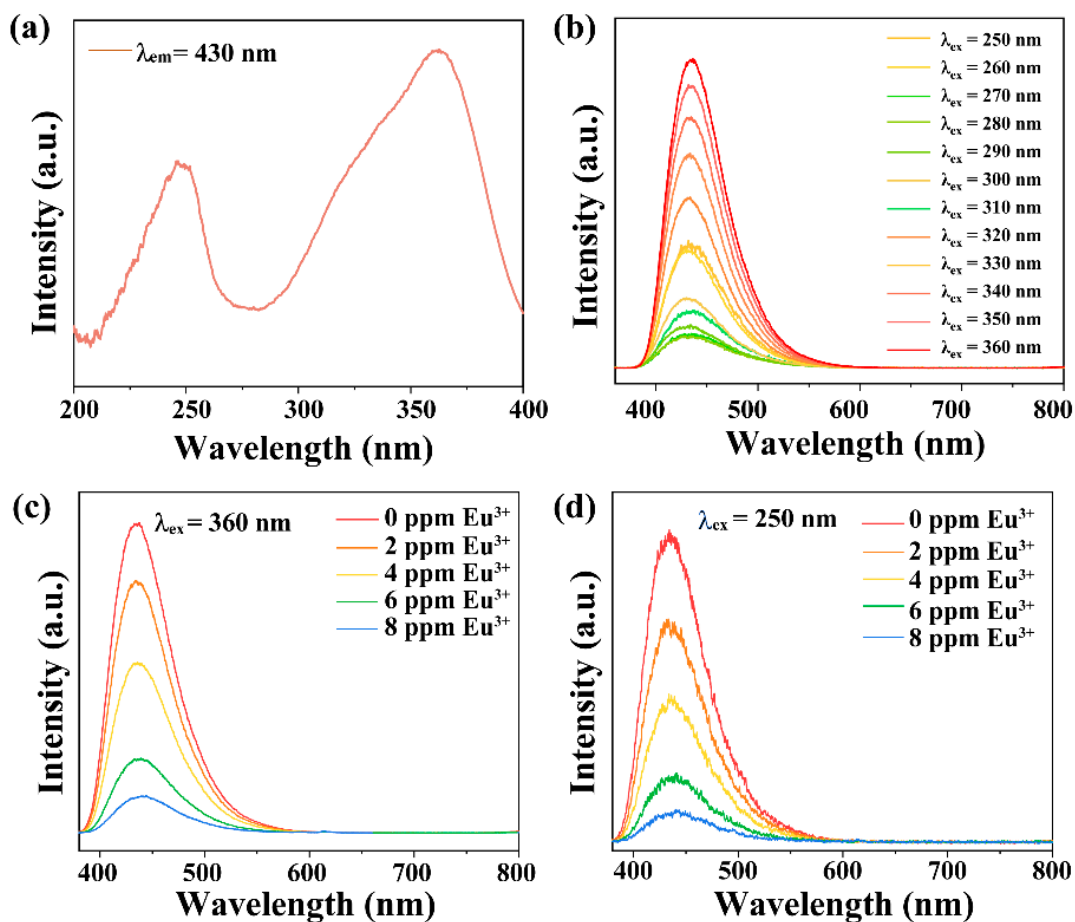


Fig. S2 (a) PL excitation spectra of the CDs; (b) Steady-state emission spectra of CDs at different excitation wavelengths; Steady-state emission spectrum of CDs in the absence and presence of different concentrations of Eu^{3+} (c) $\lambda_{ex} = 360$ nm, (d) $\lambda_{ex} = 250$ nm.

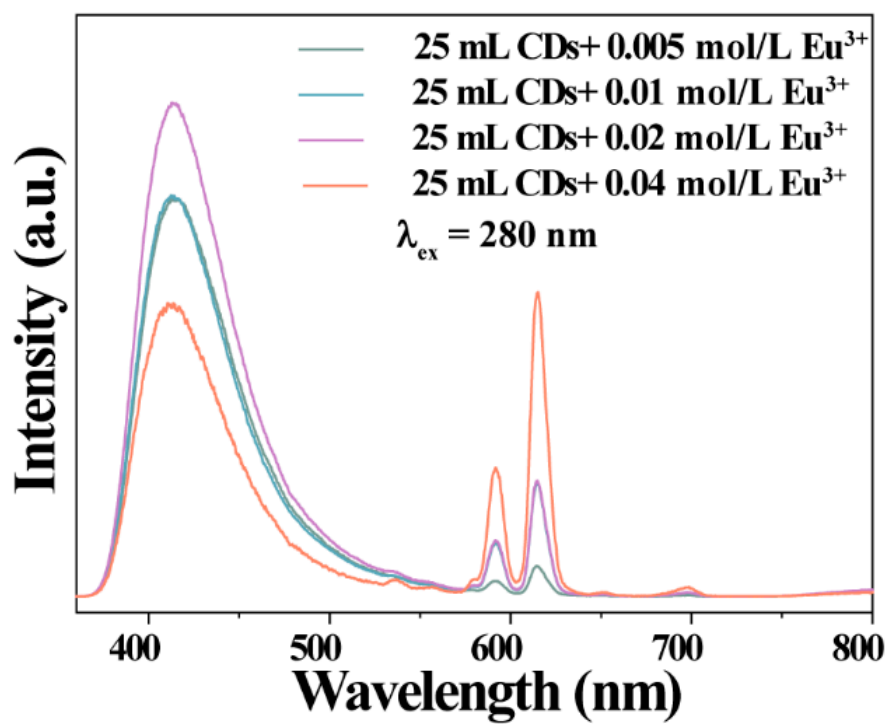


Fig. S3 Emission of synthetic materials in different proportion.

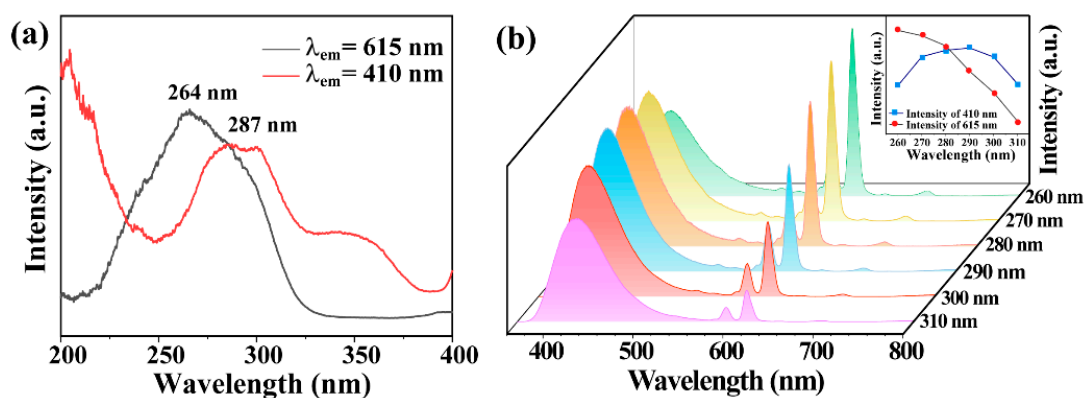


Fig. S4 (a) Excitation spectra of CDs-F2 monitored at 615 nm and 410 nm, respectively. (b) Emission of CDs-F2 with the excitation wavelength from 260-310 nm.

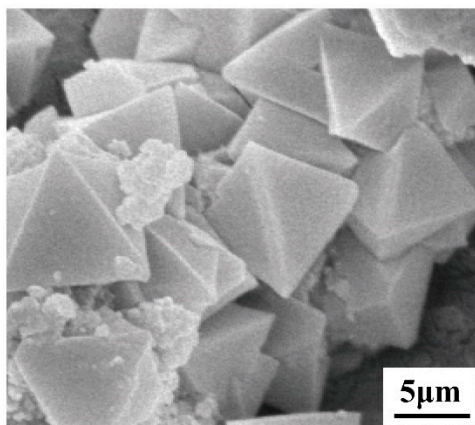


Fig. S5 SEM image of CDs-F2.

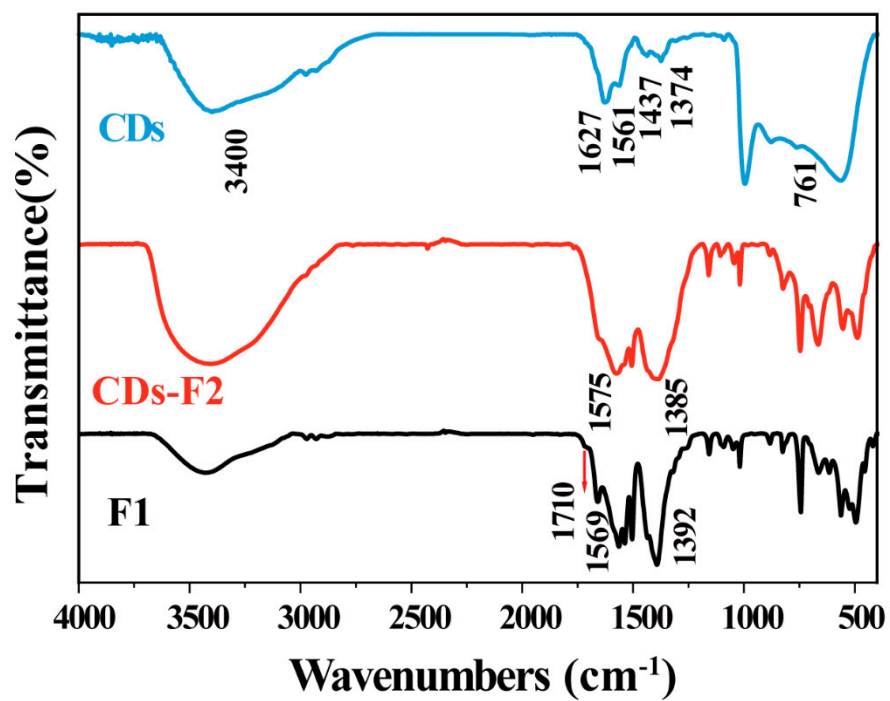


Fig. S6 FT-IR spectra analysis of F1, CDs-F2 and CDs.

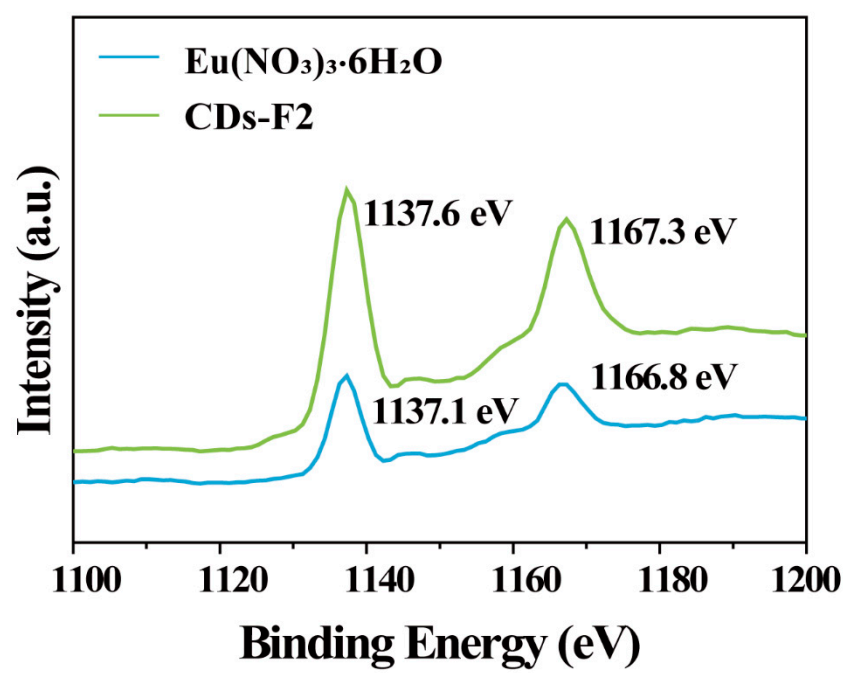


Fig. S7 Eu 3d XPS spectra of $\text{Eu}(\text{NO}_3)_3 \cdot \text{H}_2\text{O}$ and CDs-F2.

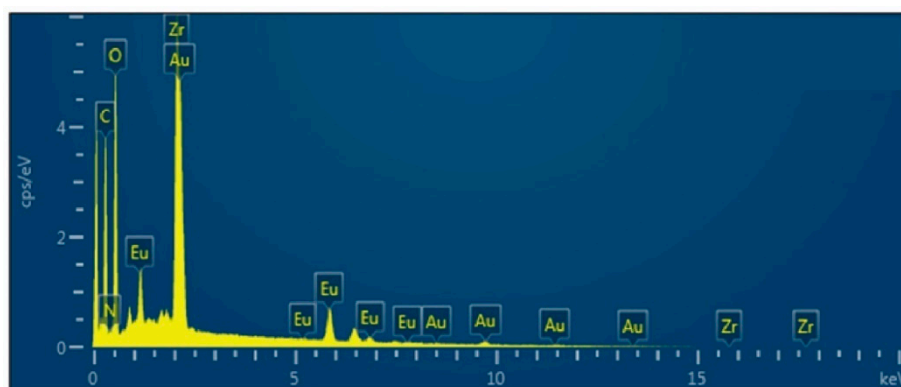


Fig. S8 EDX spectra of CDs-F2.

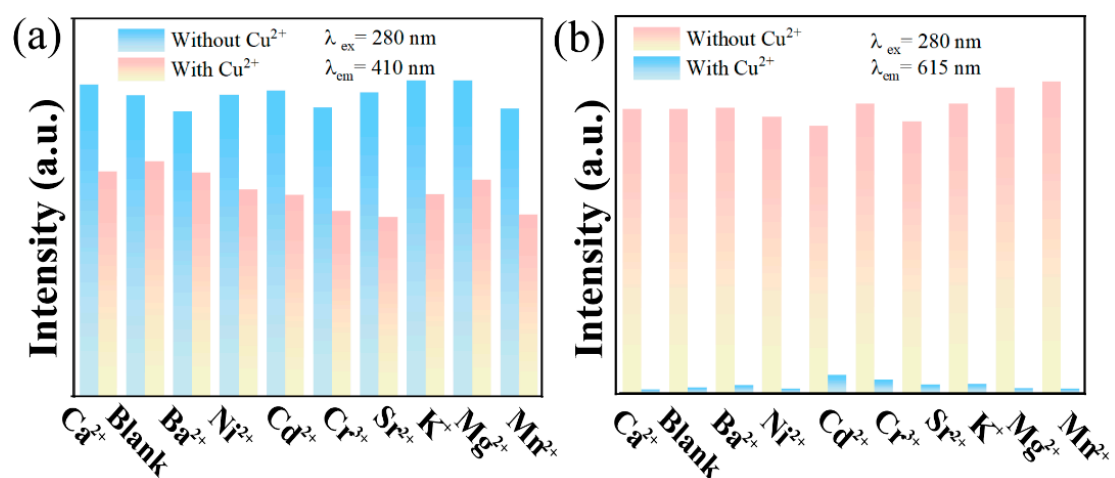


Fig. S9 The response of CDs-F2 toward coexisting metal ions in the presence and absence of Cu^{2+} : (a) $\lambda_{\text{em}} = 410 \text{ nm}$; (b) $\lambda_{\text{em}} = 615 \text{ nm}$.

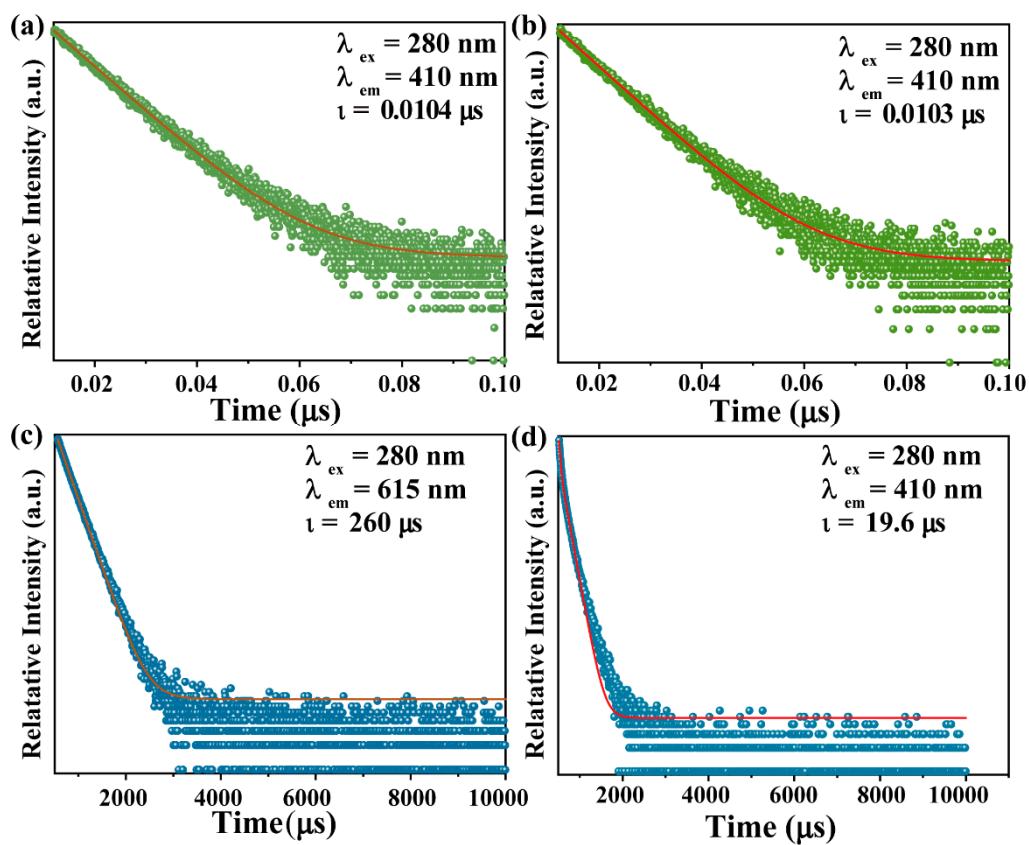


Fig. S10 Fluorescence lifetimes of **CDs-F2** in the absence (a), (c) and presence (b), (d) of Cu^{2+} in aqueous solution.

Table S1 CDs-F2 determined by Energy dispersive analysis by X-rays (EDX).

| Element | C | N | Zr | Eu |
|----------|-------|------|------|------|
| Atomic % | 56.15 | 0.78 | 6.16 | 0.38 |