

Supplementary materials

Nitrogen-Doped Carbon Dots for Ultrasensitive Detection of Hg²⁺ in Traditional Chinese Medicine and Bioimaging Applications

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Figures caption:

Figure S1. EDS analysis for N,S-CDs-1.

Figure S2. EDS analysis for N,S-CDs-2.

Figure S3. Full scan XPS spectrum for N,S-CDs-1, (A) and N,S-CDs-2 (B).

Figure S4. High resolution C1s (A), O1s (B), pyrr-N1s (C) and S2p (D) of the as-prepared N,S-CDs-1.

Figure S5. High resolution C1s (A), O1s (B), pyri-N1s (C) and S2p (D) of the as-prepared N,S-CDs-2.

Figure S6. Normalized FL decay of N,S-CDs-2 and N,S-CDs-2-Hg²⁺ under excitation at 350 nm (A). UV-Vis absorption spectra of N,S-CDs-2 and N,S-CDs-2-Hg²⁺ (B).

Figure S7. Normalized FL decay of N,S-CDs-1 and N,S-CDs-1-Hg²⁺ under excitation at 350 nm (A). UV-vis absorption spectra of N,S-CDs-1 and N,S-CDs-1-Hg²⁺ (B).

Figure S8. Photography of three CDs solution (A for N-CDs, B for N,S-CDs-1 and C for N,S-CDs-2) after addition of different ions.

Figure S9. The selectivity N,S-CDs-1 and N,S-CDs-2 to other ions.

Figure S10. Cell viability of A549 cell after incubation with various concentration of N-CDs for 24 h.

Table S1. Parameters of the Stern-Volmer equation in the system at different temperatures.

Table S2. Content of Hg²⁺ in three Sanqi sample analyzed by this method and compared to ICP-MS method.

Fig. S1

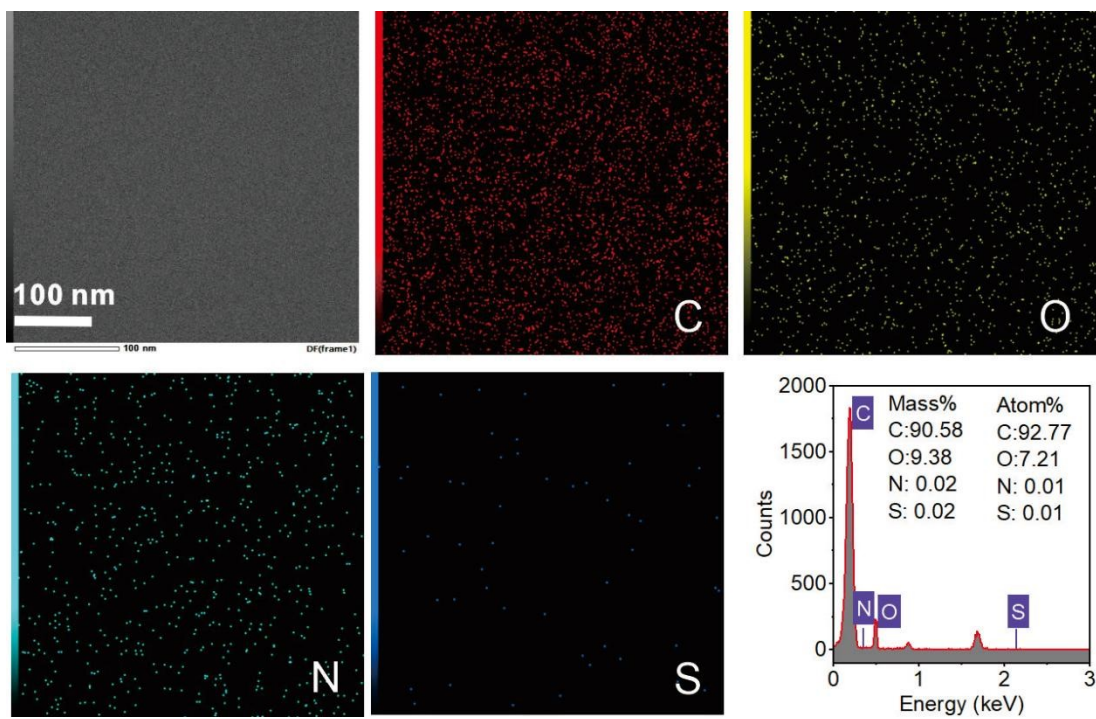


Fig. S2

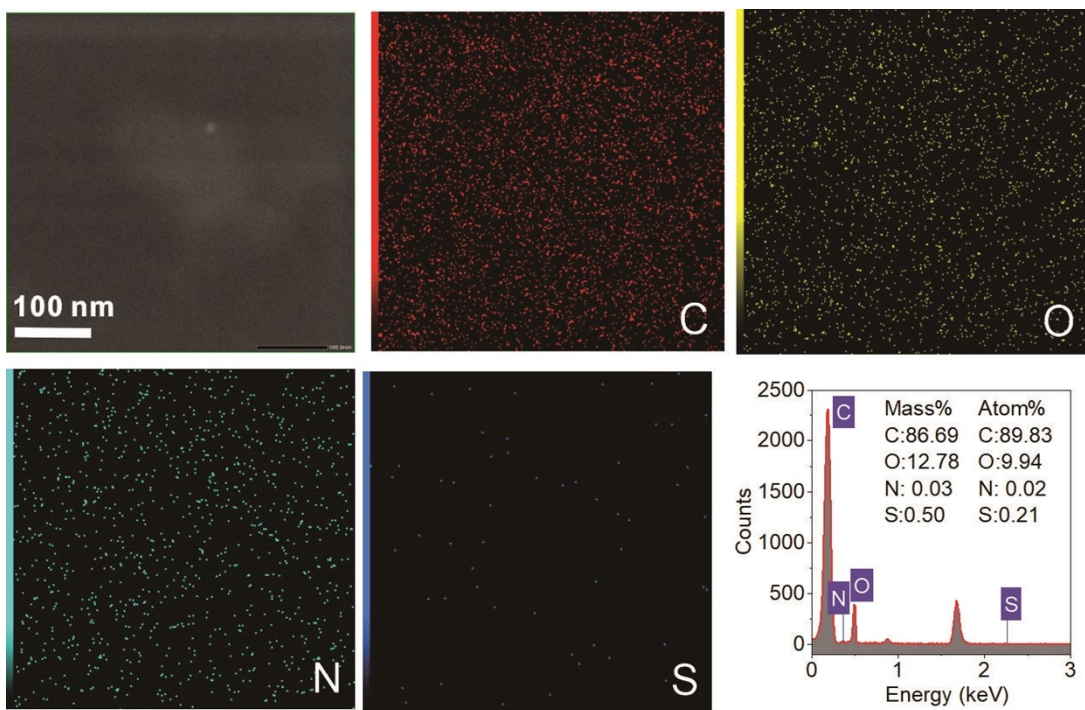


Fig. S3.

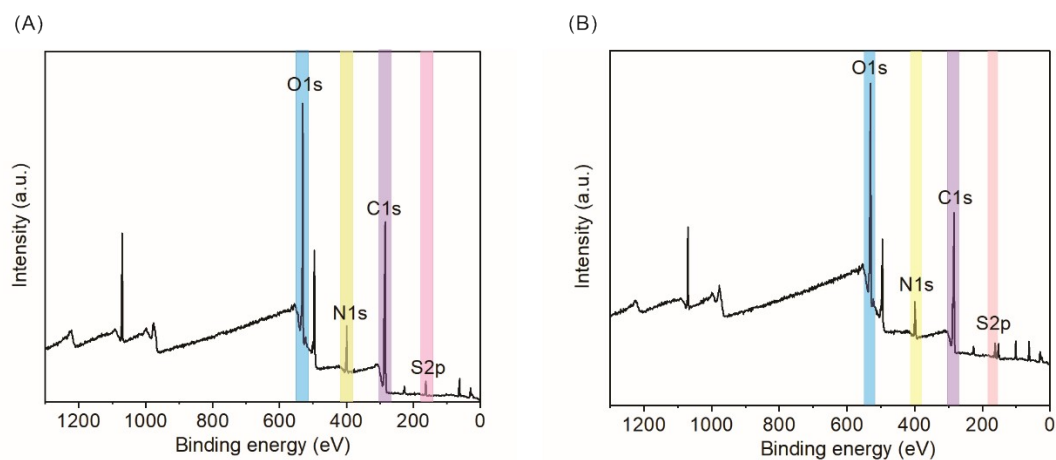


Fig. S4.

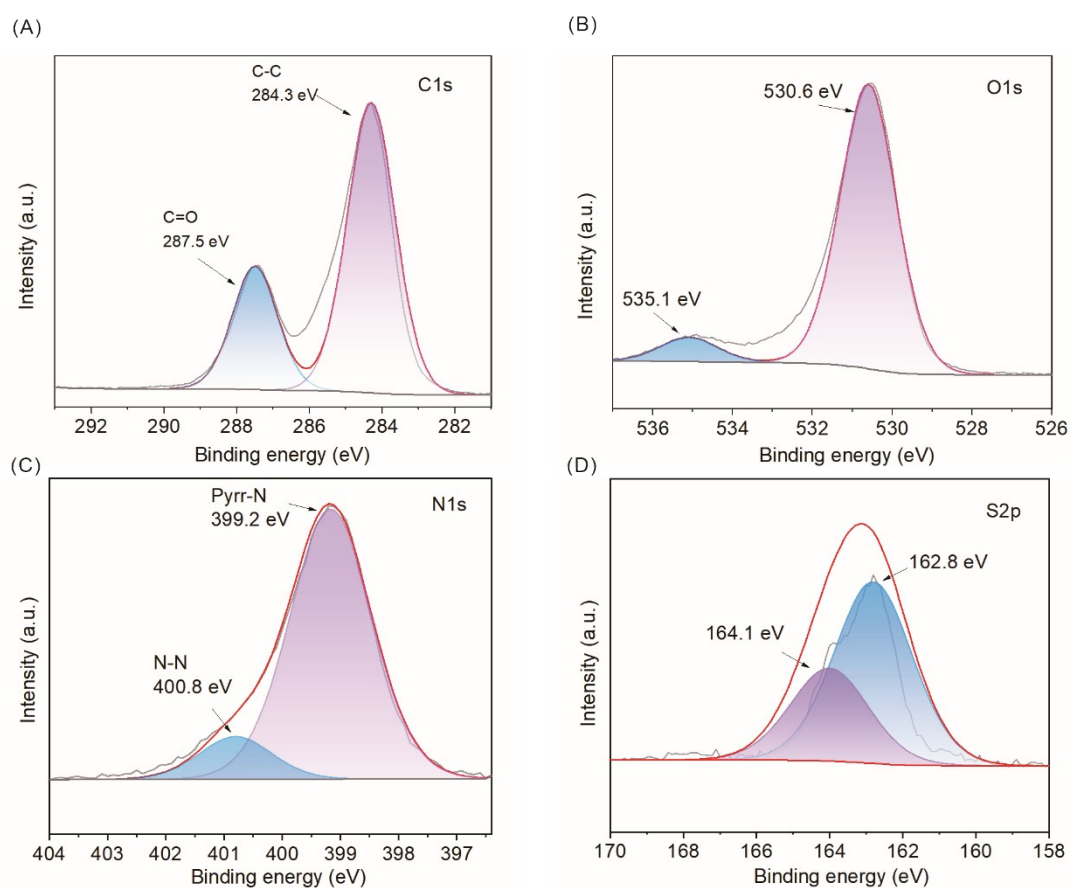


Fig. S5.

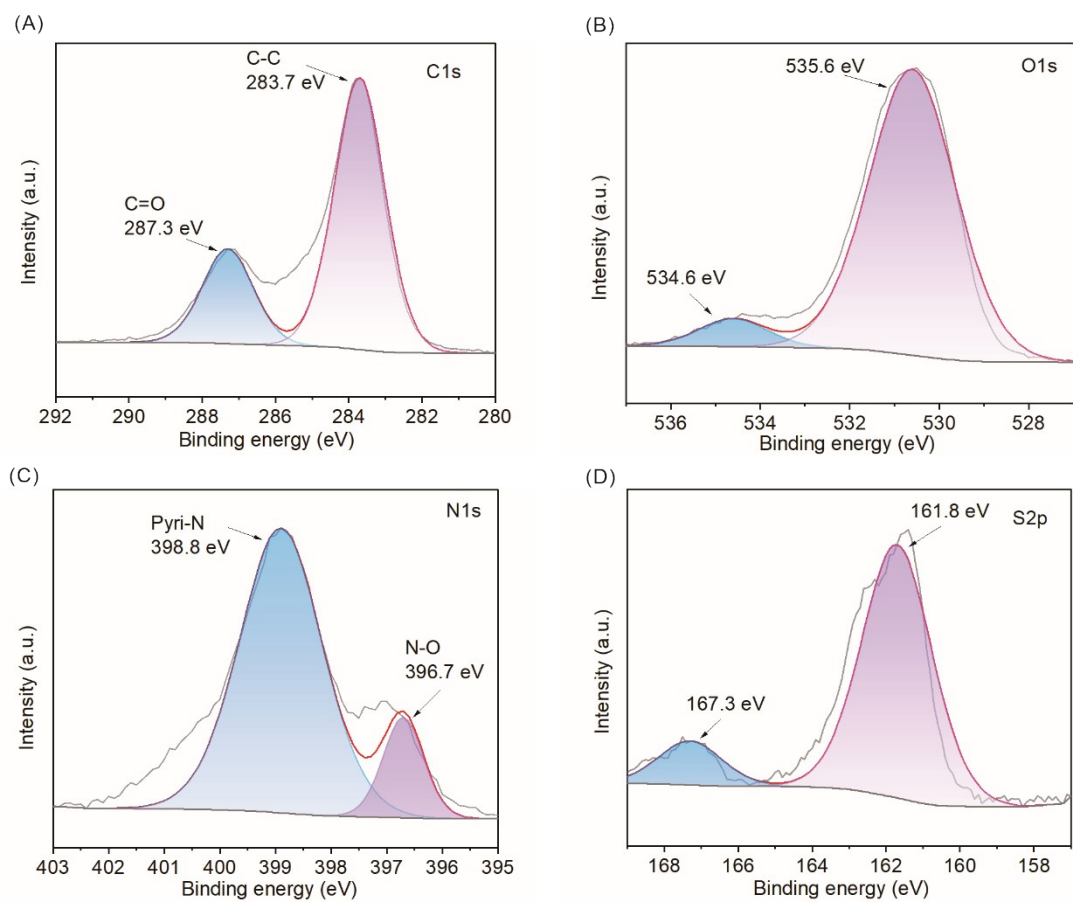


Fig. S6.

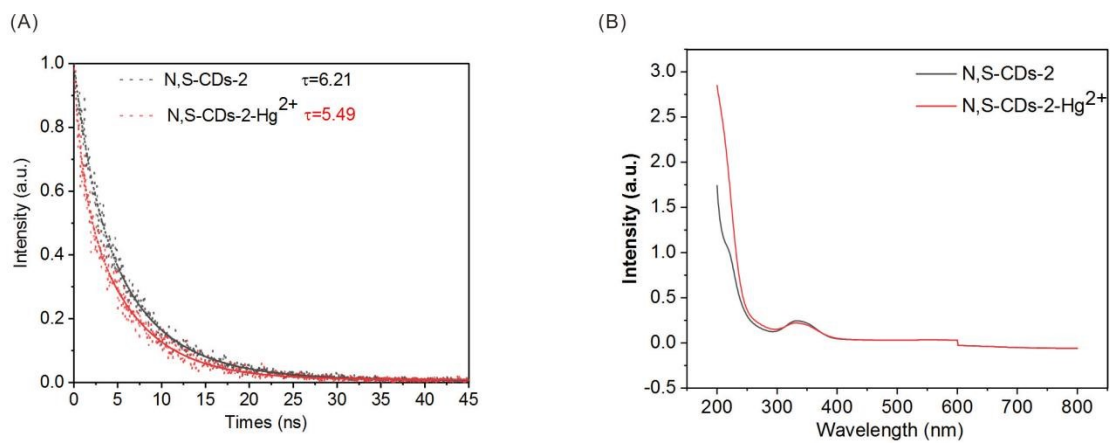


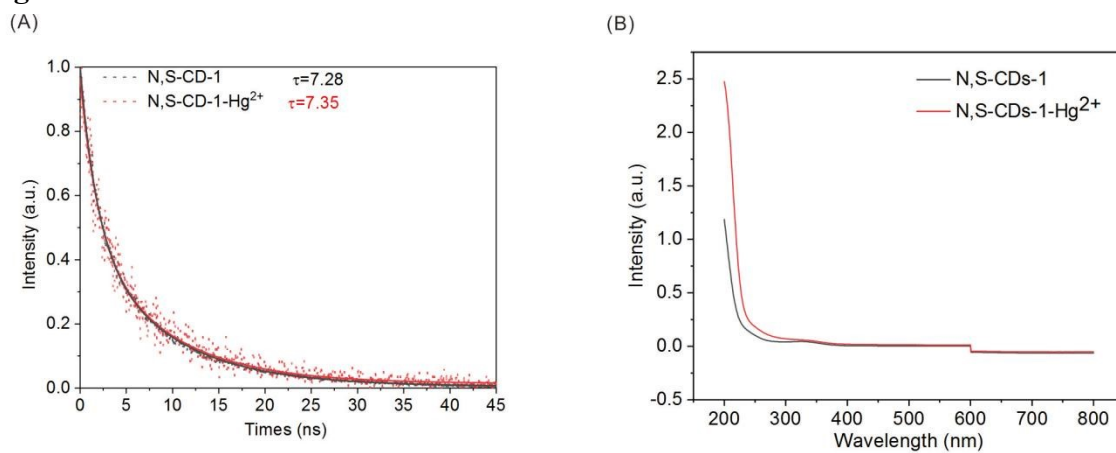
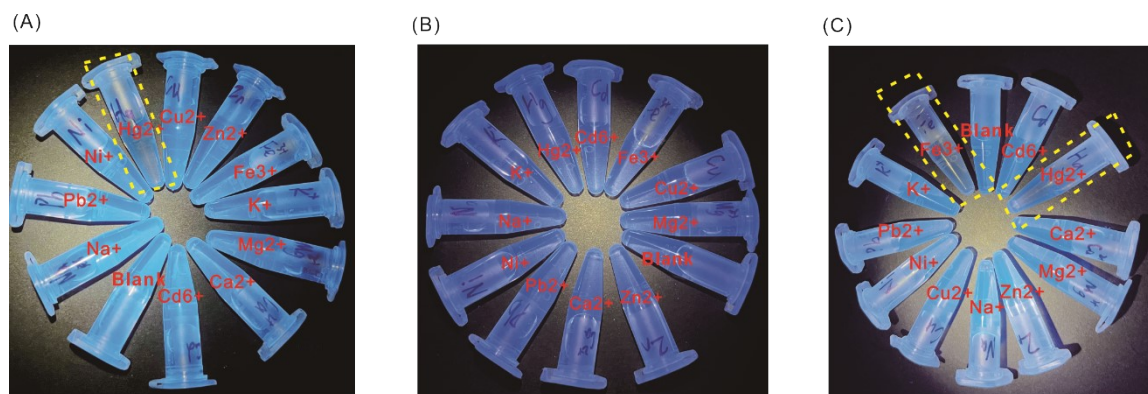
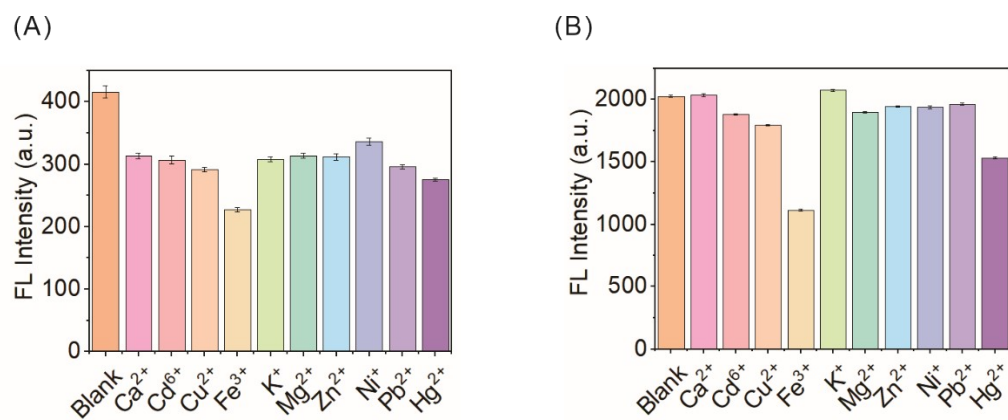
Fig. S7.**Fig. S8.****Fig. S9.**

Fig. S10.

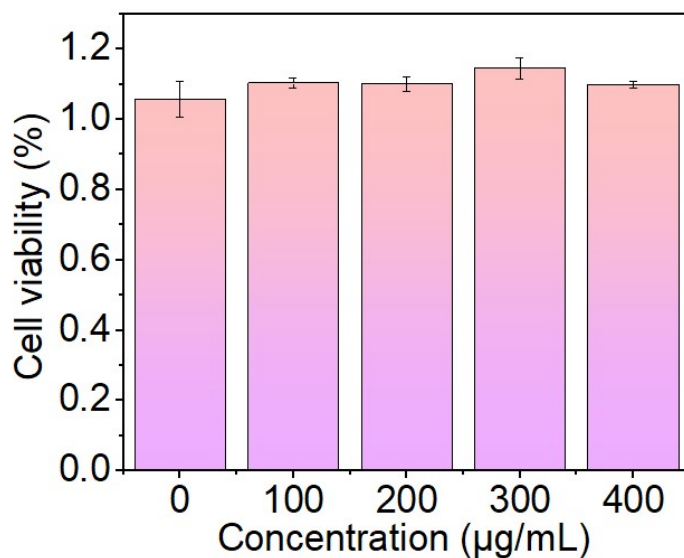


Table S1

Temperature	K_{SV} ($L \cdot mol^{-1}$)	k_q ($L \cdot mol^{-1} \cdot s^{-1}$)	R^2
30°C	3.933×10^4	5.619×10^{12}	0.9927
40°C	4.756×10^4	6.794×10^{12}	0.9962
50°C	5.371×10^4	7.673×10^{12}	0.9929

Table S2

Samples	Content (average \pm SD, RSD%, µg/kg) (n=3)	
	This method	ICP-MS
Sanqi001	25.8 \pm 0.3 (1.6)	24.8 \pm 0.2 (0.6)
Sanqi002	25.5 \pm 0.4 (1.7)	25.6 \pm 0.1 (0.7)
Sanqi003	26.8 \pm 0.6 (1.8)	26.2 \pm 0.3 (0.8)