Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information of

Microwave-assisted synthesis of water-soluble Eu^{3+} hybrid carbon dots with enhanced fluorescence for sensing of Hg^{2+} ion and imaging of fungal cells

Mittal L. Desai[a], Sanjay Jha[b], Hirakendu Basu[c], Rakesh Kumar Singhal[c], P. K. Sharma[c] and Suresh Kumar Kailasa[a*],

[a]Department of Applied Chemistry, S. V. National Institute of Technology, Surat-395 007, India
[b]Gujarat Agricultural Biotechnology Institute, Navsari Agricultural University, Surat-395007, India
[c]Analytical Chemistry Division, Bhabha Atomic Research Center, Trombay, Mumbai 400085, India
[*]Corresponding author, Phone: +91-261-2201730; Fax: +91-261-2227334
E-mail: sureshkumarchem@gmail.com; skk@chem.svnit.ac.in

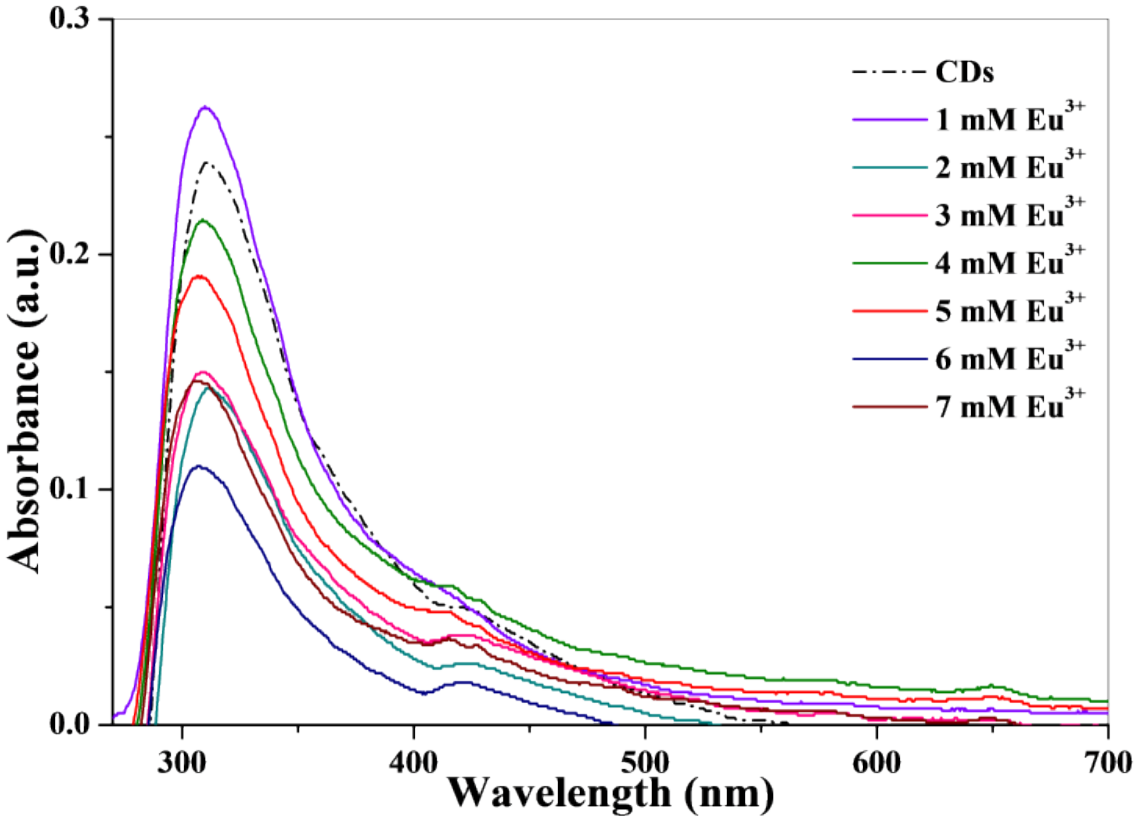

Fig. S1 UV-visible absorption spectra of CDs by adding various concentration of Eu^{3+} ion from 1 to 7 mM.

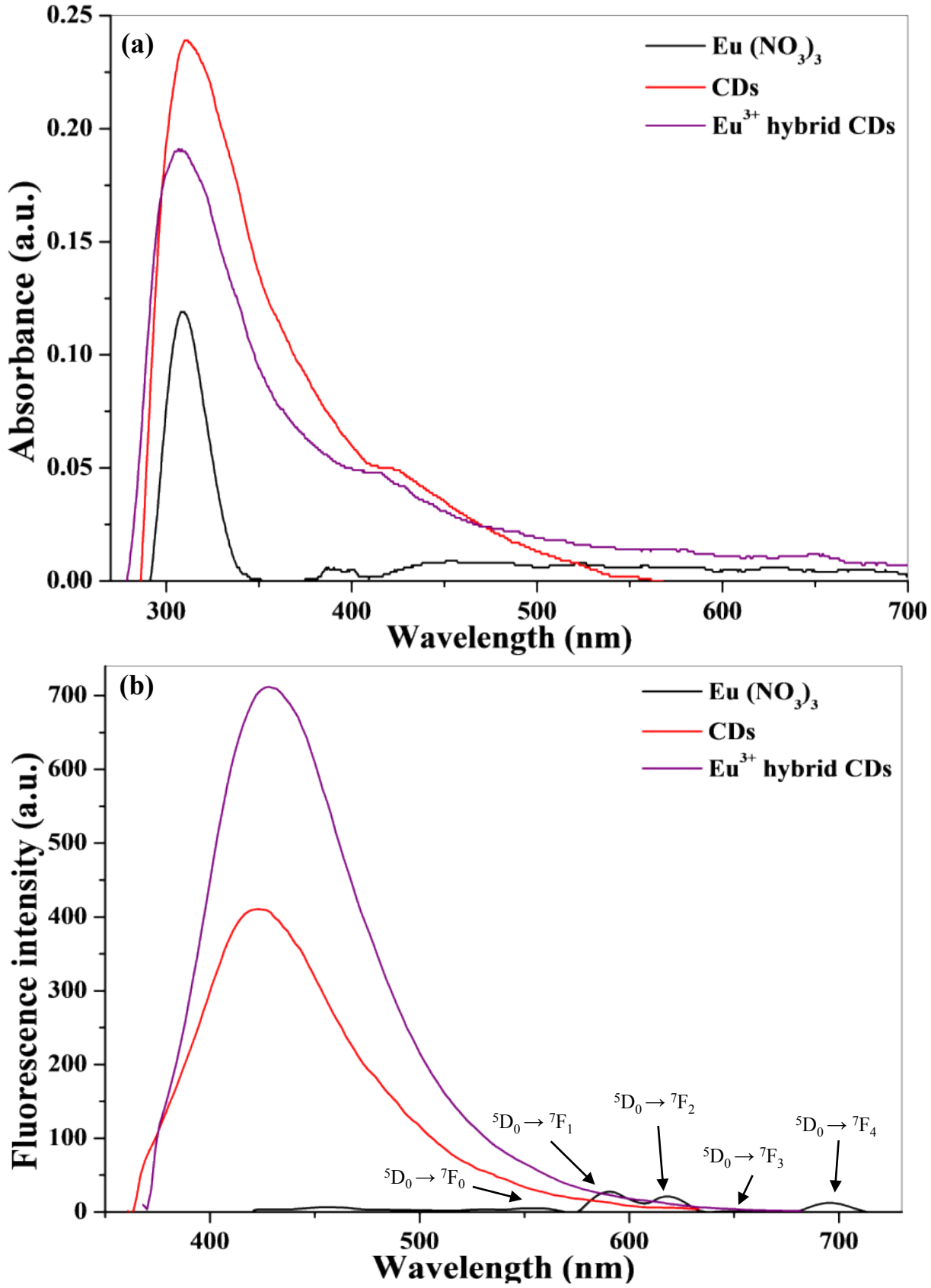

Fig. S2 (a) UV-visible absorption and (b) fluorescence spectra of $Eu(NO_3)_3$, CDs and Eu^{3+} hybrid CDs.

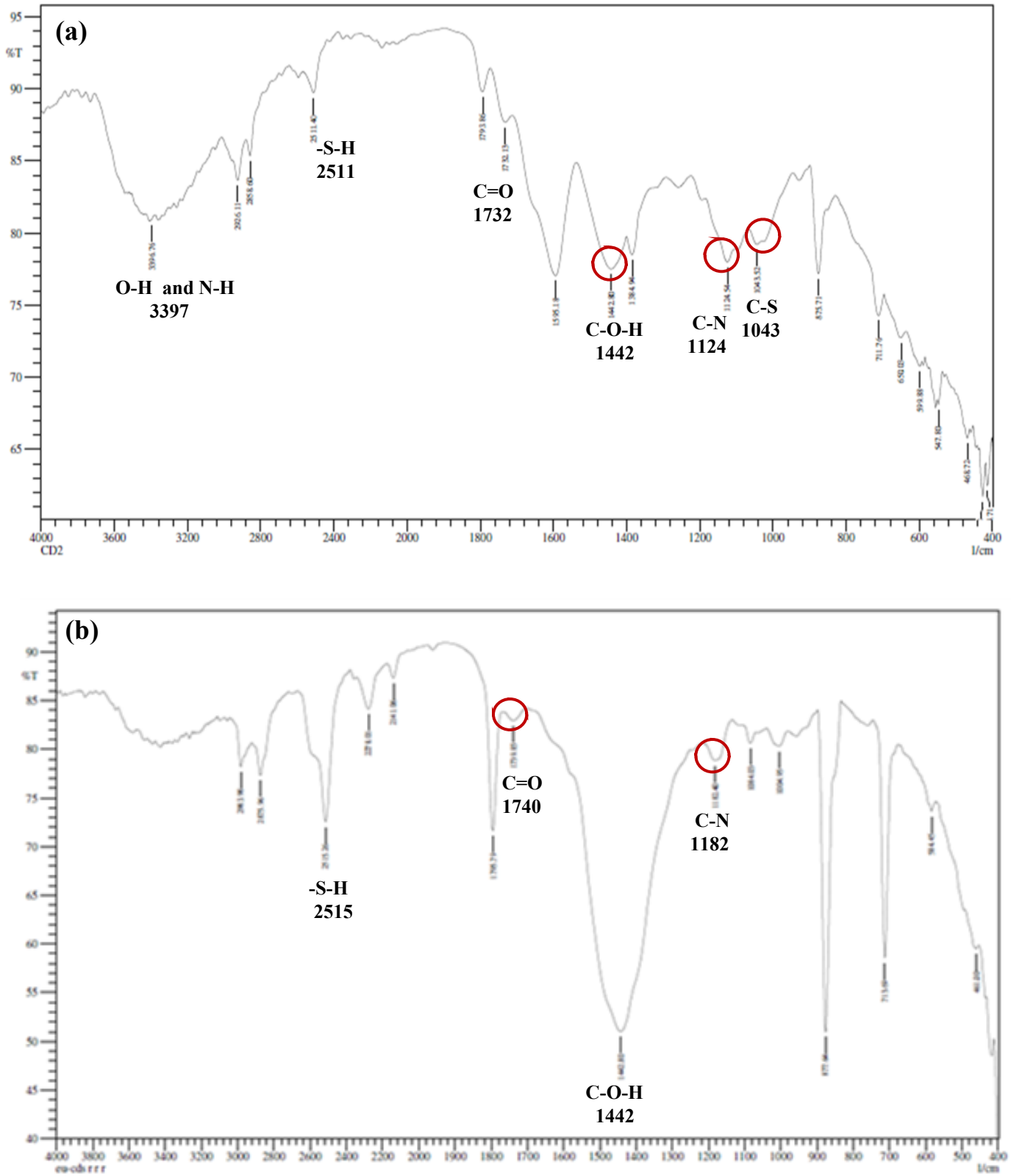

Fig. S3 ATR-FTIR spectra of (a) CDs and (b) Eu^{3+} hybrid CDs.

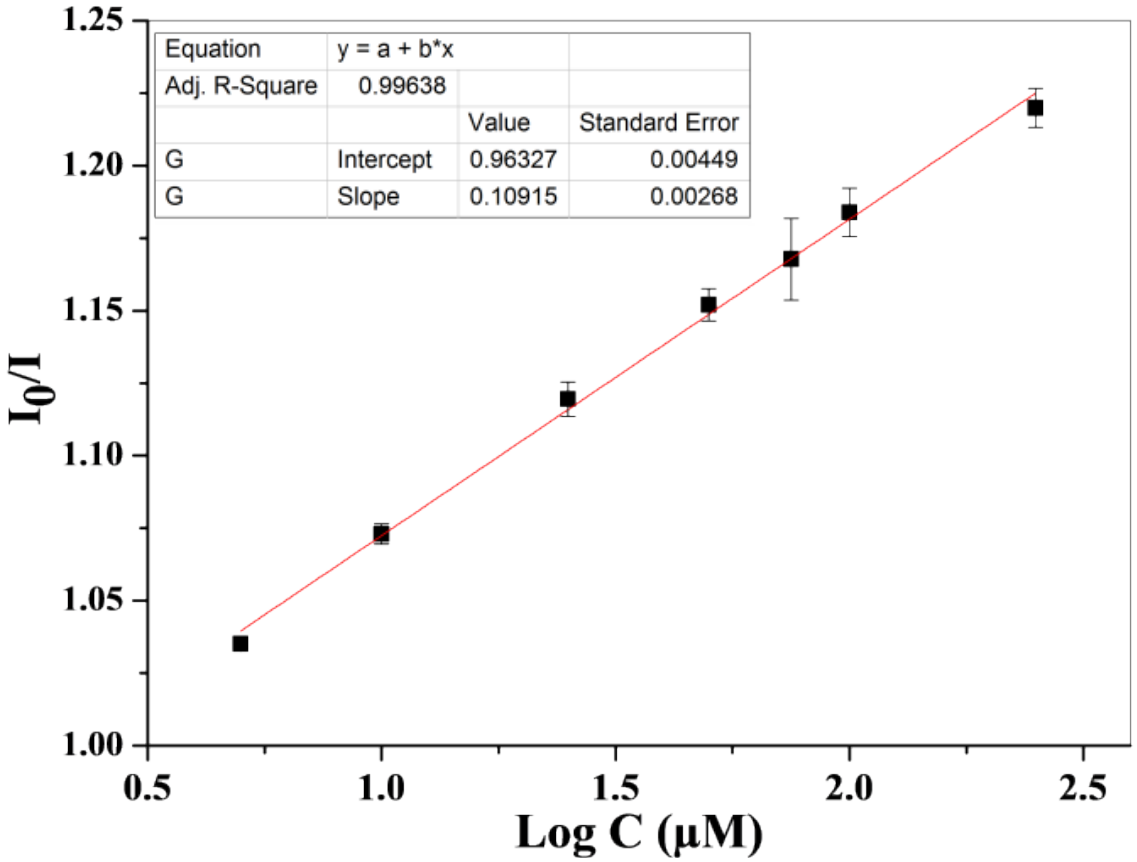

Fig. S4 Calibration curve of fluorescence intensity at 427 nm (I_0/I) vs Hg^{2+} ion concentration in the range of 5 – 250 μM. The fitted equation is y = −0.10915x + 0.96327, with R^2 = 0.99638.

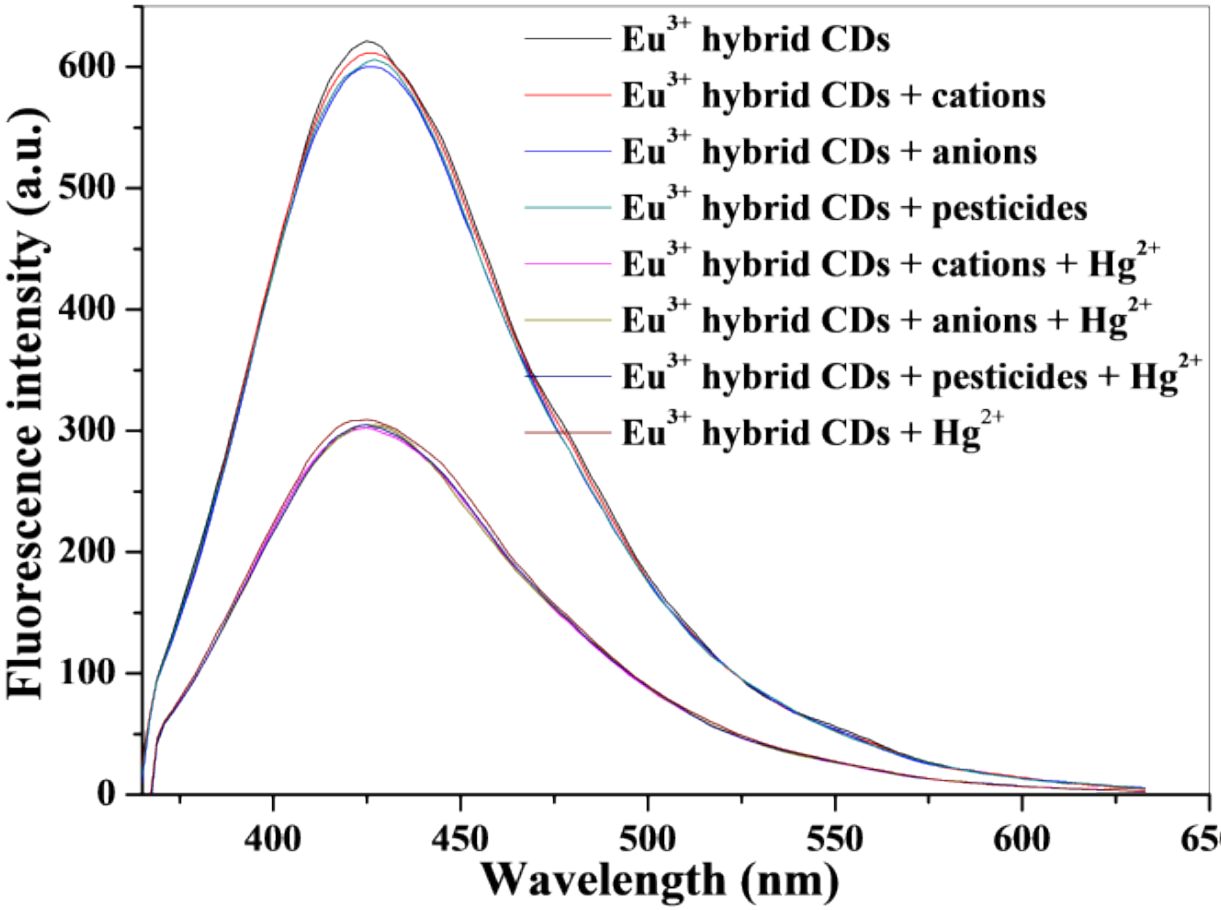

Fig. S5 Fluorescence emission spectra of Eu^{3+} hybrid CDs with Hg^{2+} (1.0 mM) in the presence of various chemical anions - Cl^-, Br^-, I^-, SO_4^{2-}, S^{2-}, CH_3COO^-, NO_3^- , $Cr_2O_7^{2-}$ metal ions - Na^+, K^+, Br^{2+}, Ca^{2+}, Zn^{2+}, Ni^{2+}, Fe^{2+}, Al^{3+} and pesticides - acetamipridi, buprofezin, imazethapyre, quinalphose, sufosulfuron and monocrotophos , metriburin, 1.0 mM).

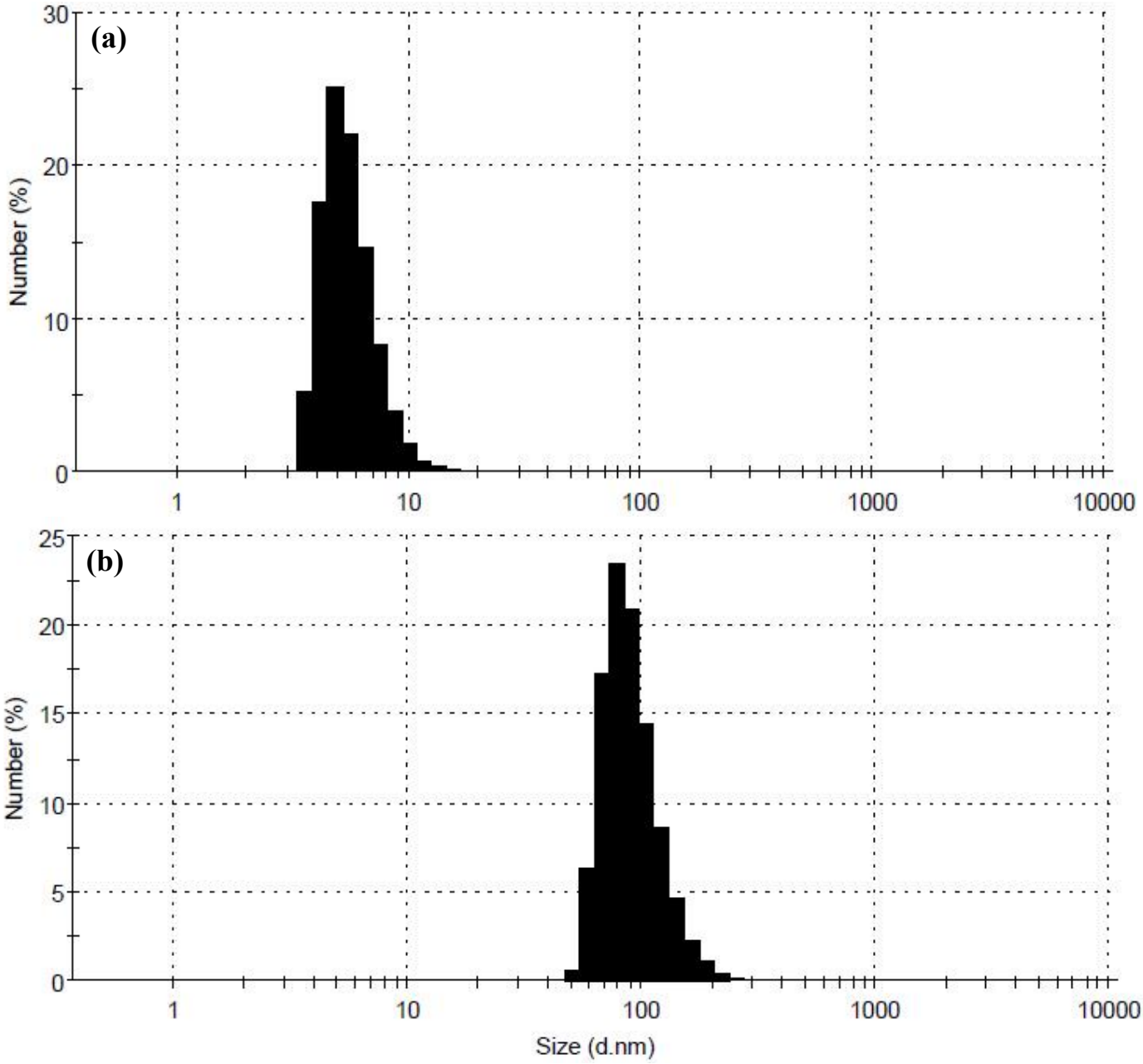

Fig. S6 DLS data of Eu^{3+} hybrid CDs and (b) Eu^{3+} hybrid CDs with Hg^{2+}

Table S1 Detection of Hg^{2+} ion in water samples using Eu^{3+} hybrid CDs as a fluorescent probe.

Sample	Added concentration (μM)	Found concentration (μM)	Recovery (%) (n=3)	RSD (%) (n=3)
Canal water	5.0	4.993561	99.87122	0.109361
	10	10.0459	100.459	0.102812
	25	24.96006	99.84025	0.113712
River water	5.0	4.982815	99.65629	0.061812
	10	10.01588	100.1588	0.083256
	25	25.01108	100.0443	0.077522
Tap water	5.0	4.987419	99.74838	0.040168
	10	10.01395	100.1395	0.126927
	25	24.89422	99.57688	0.141215