Electronic Supplementary Material (ESI) for Analyst.

Supporting information

A Simple and Ubiquitous Device for Picric Acid Detection in Latent Fingerprints using Carbon Dots

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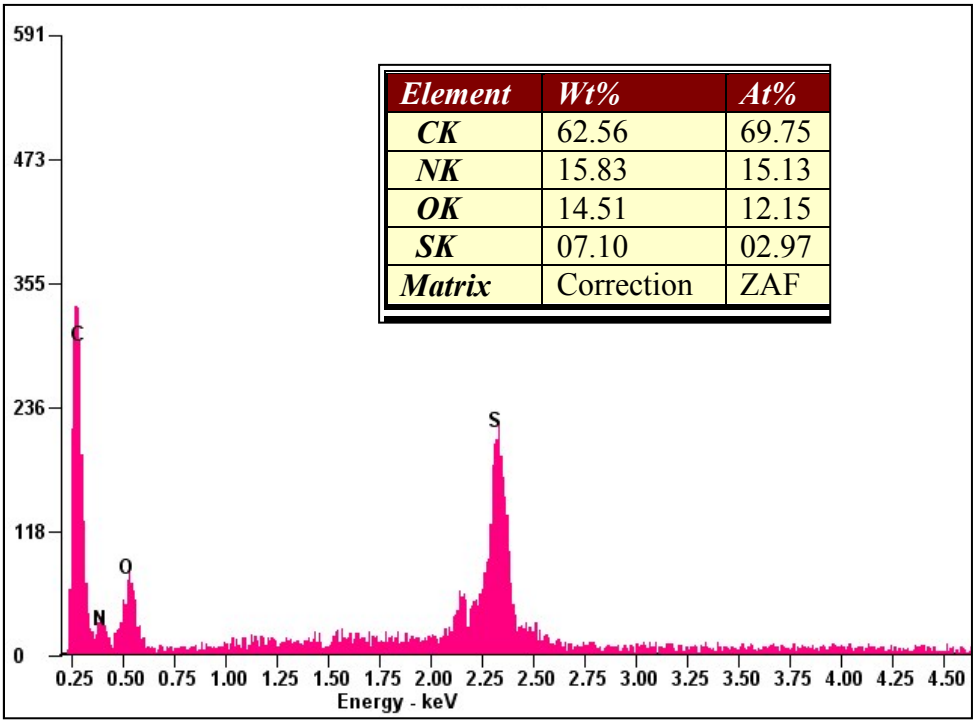


Element	Wt%	At%
CK	62.56	69.75
NK	15.83	15.13
OK	14.51	12.15
SK	07.10	02.97
Matrix	Correction	ZAF

Figure S1: EDAX data of CDs**.**

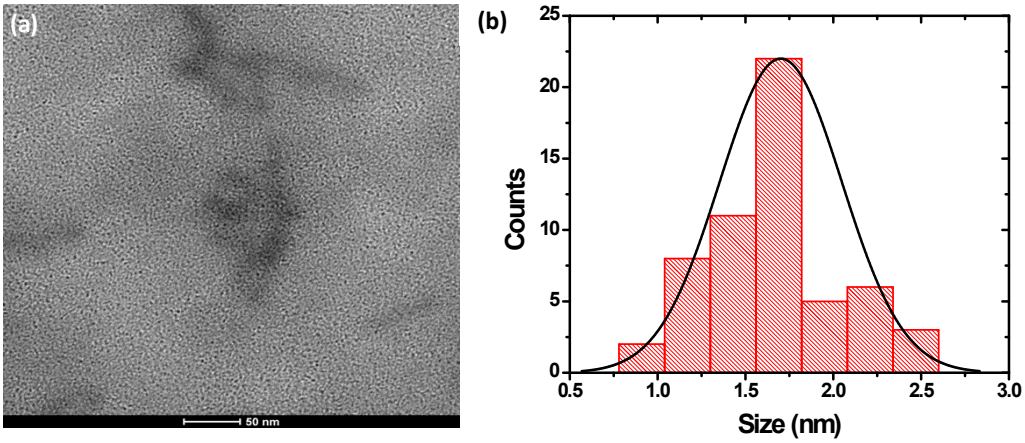


Figure S2: (a) HR-TEM image of CDs in 50 nm scale and (b) histogram plot.

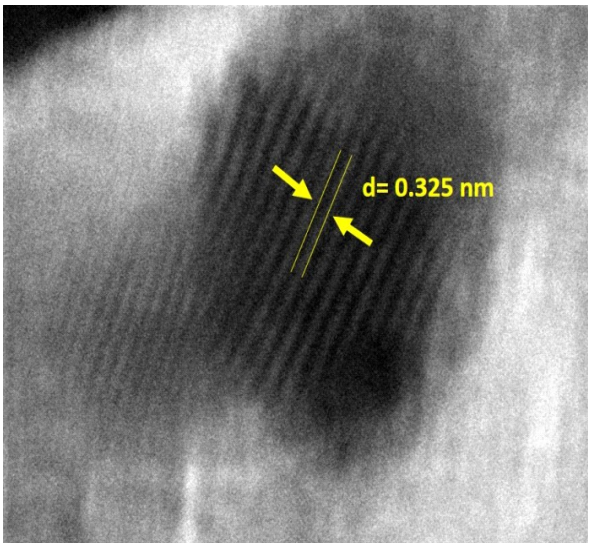


Figure S3: Lattice pattern of CDs from HR-TEM image.

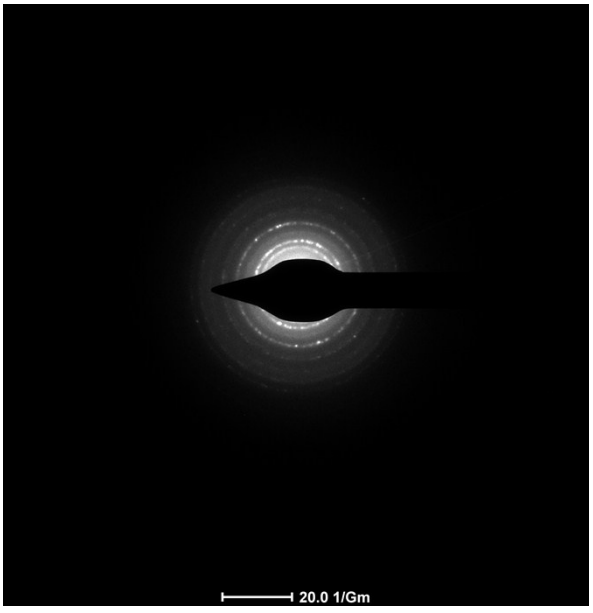


Figure S4: Selected area electron diffraction (SAED) pattern of CDs.

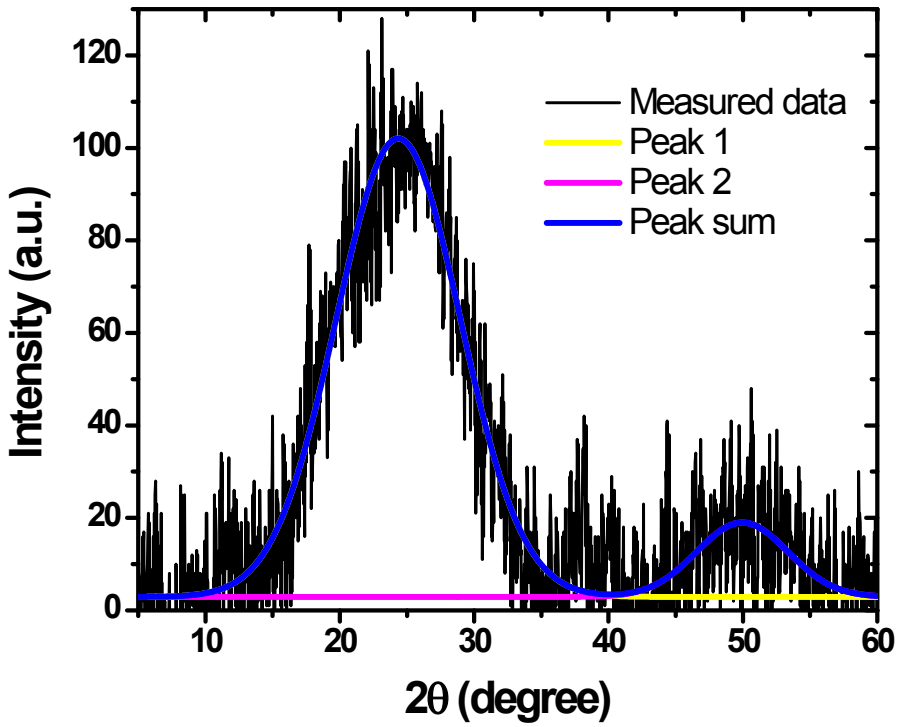


Figure S5: XRD spectrum of CDs.

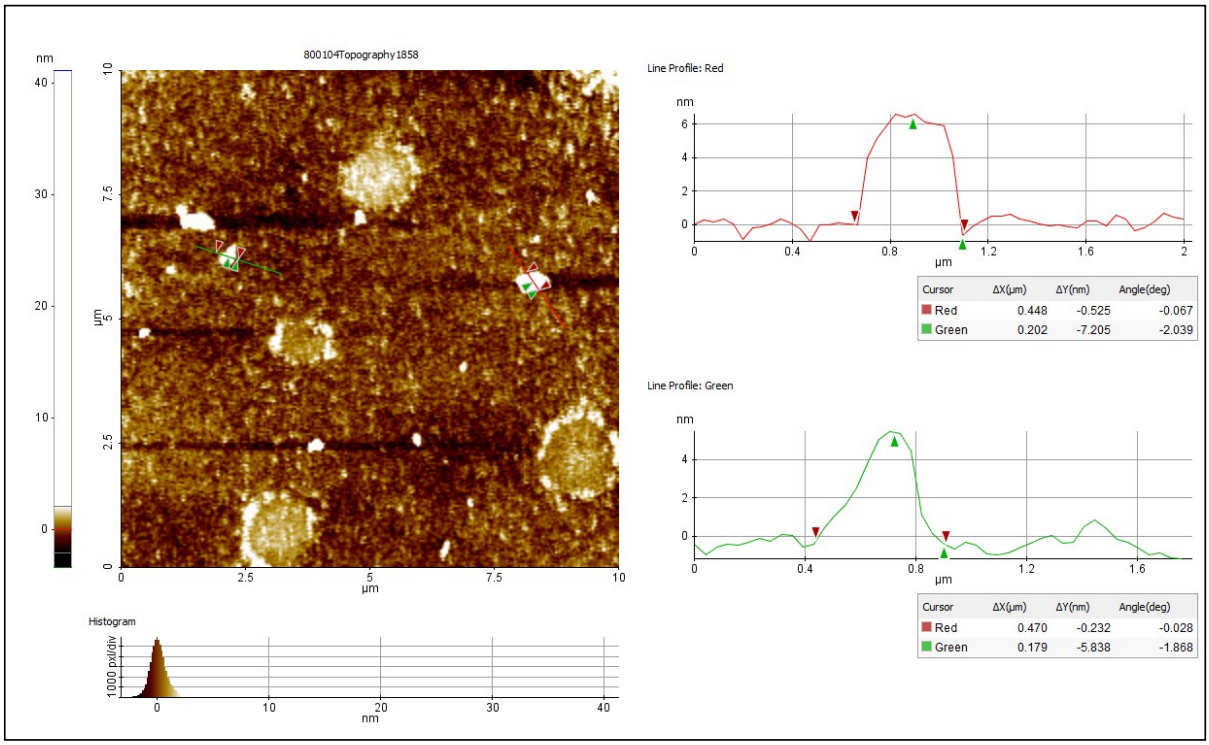


Figure S6: AFM image of CDs

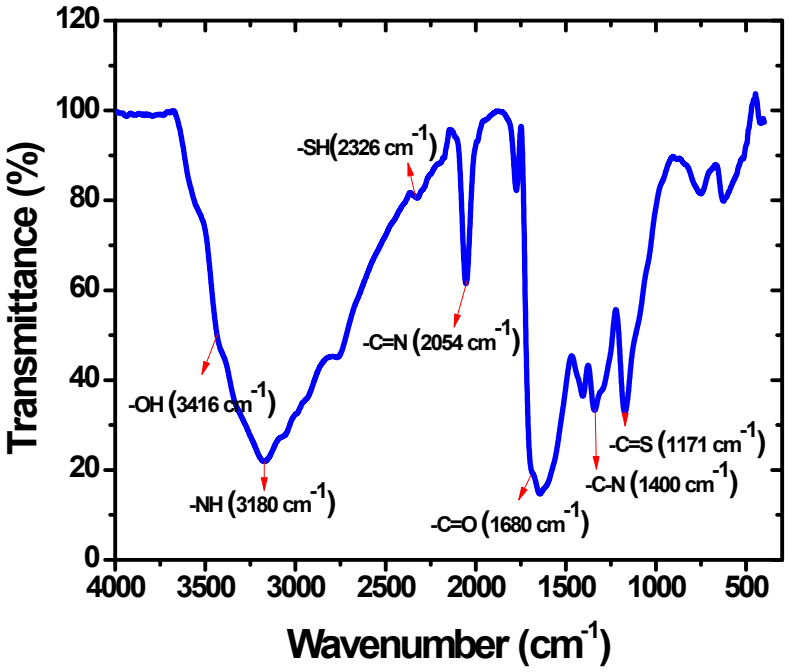


Figure S7: FT-IR spectrum of CDs

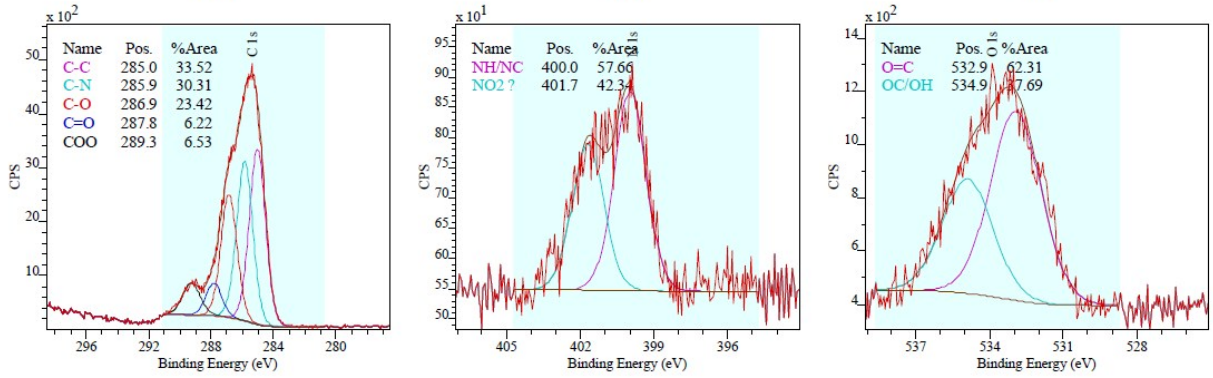


Figure S8: Deconvoluted spectrum of C1s, N1s and O1s.

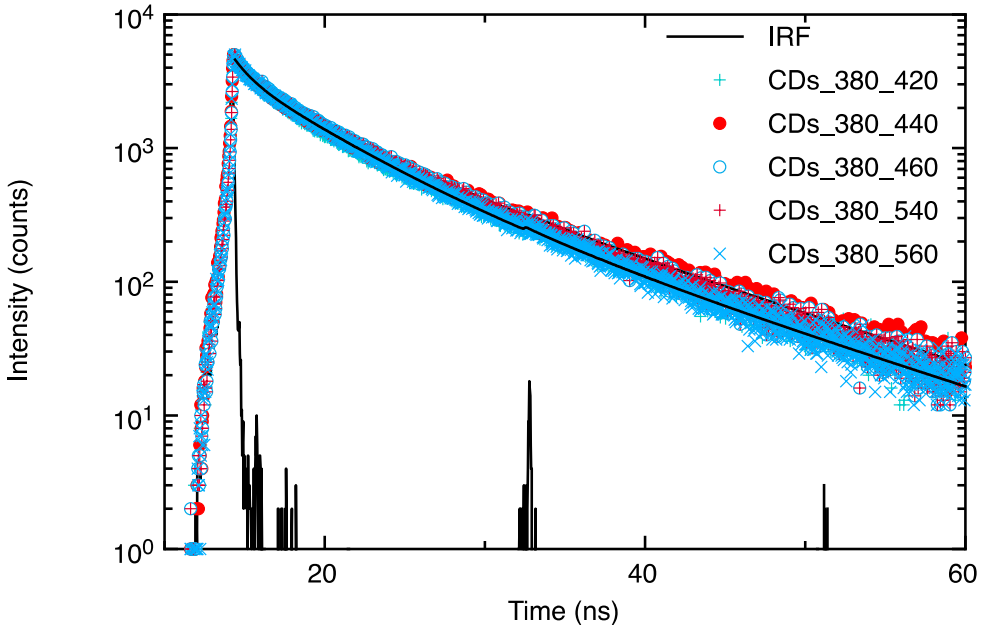


Figure S9: Fluorescence decays of CDs as a function of emission wavelength following 380 nm excitation.

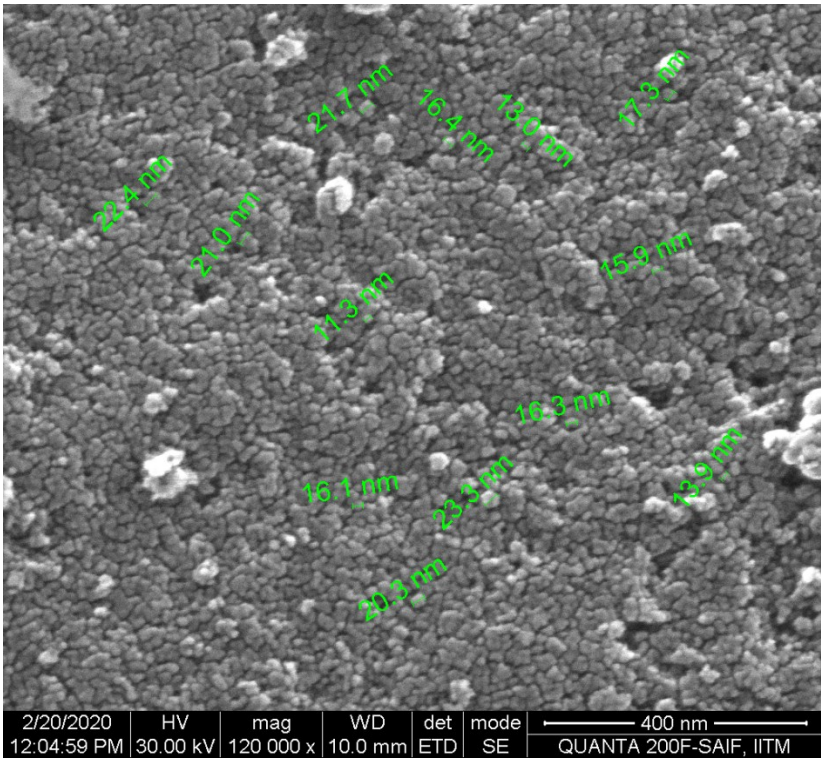


Figure S10: SEM image of silica gel coated CDs.

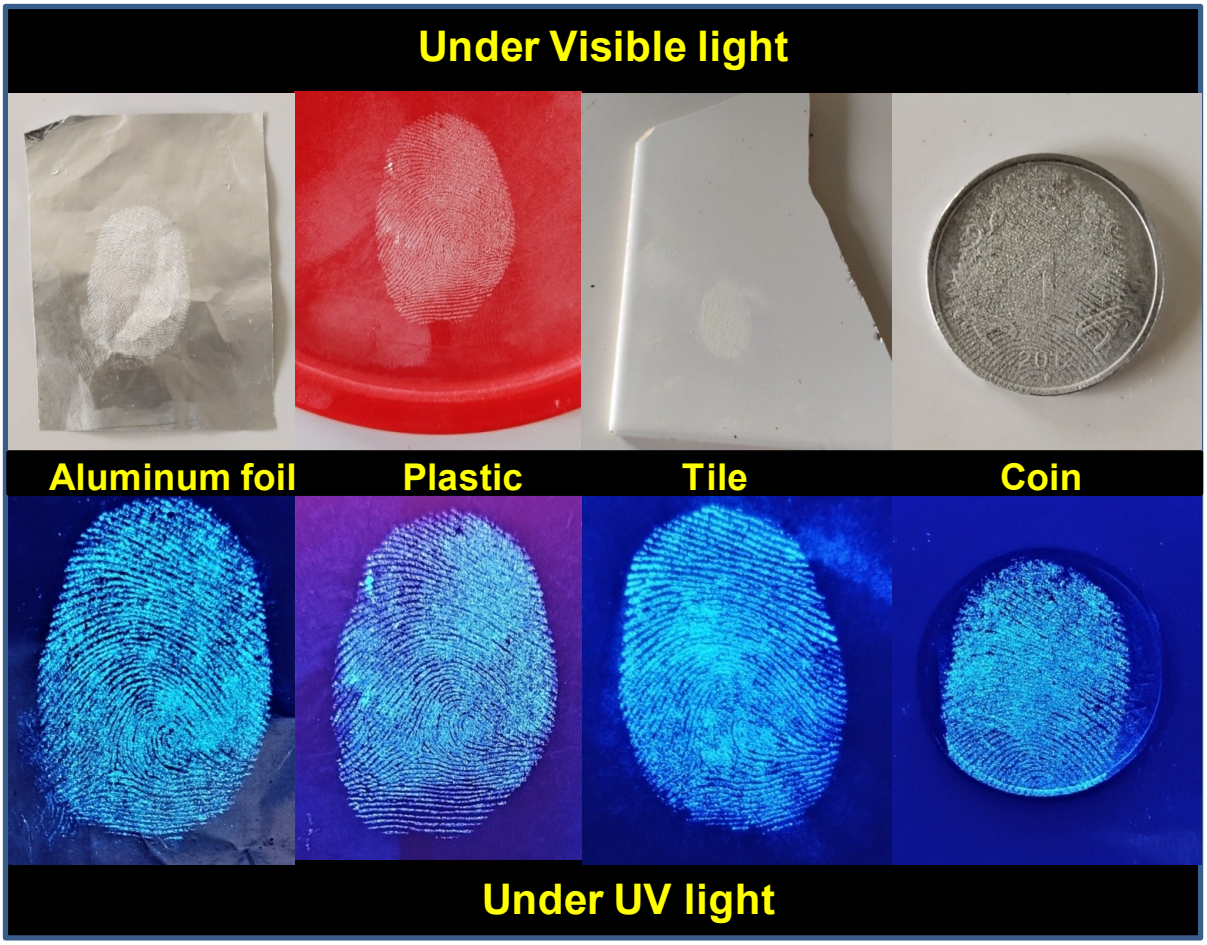


Figure S11: Detection of LFP in various substrates

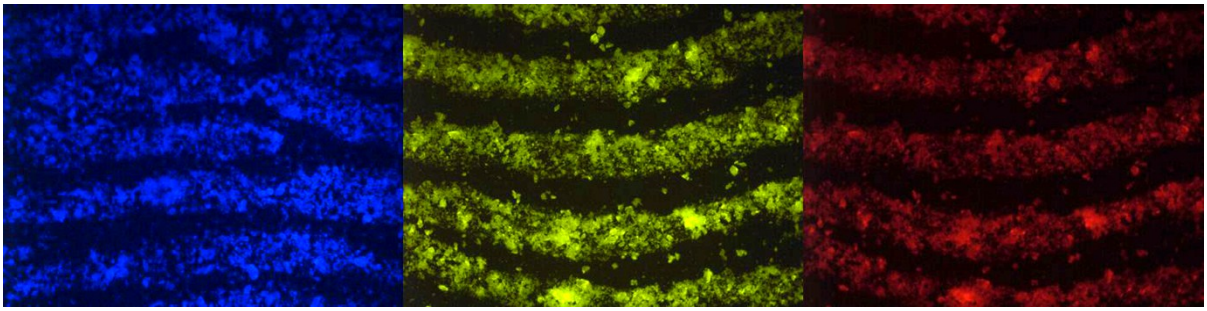


Figure S12: Fluorescence microscopic images of CDs

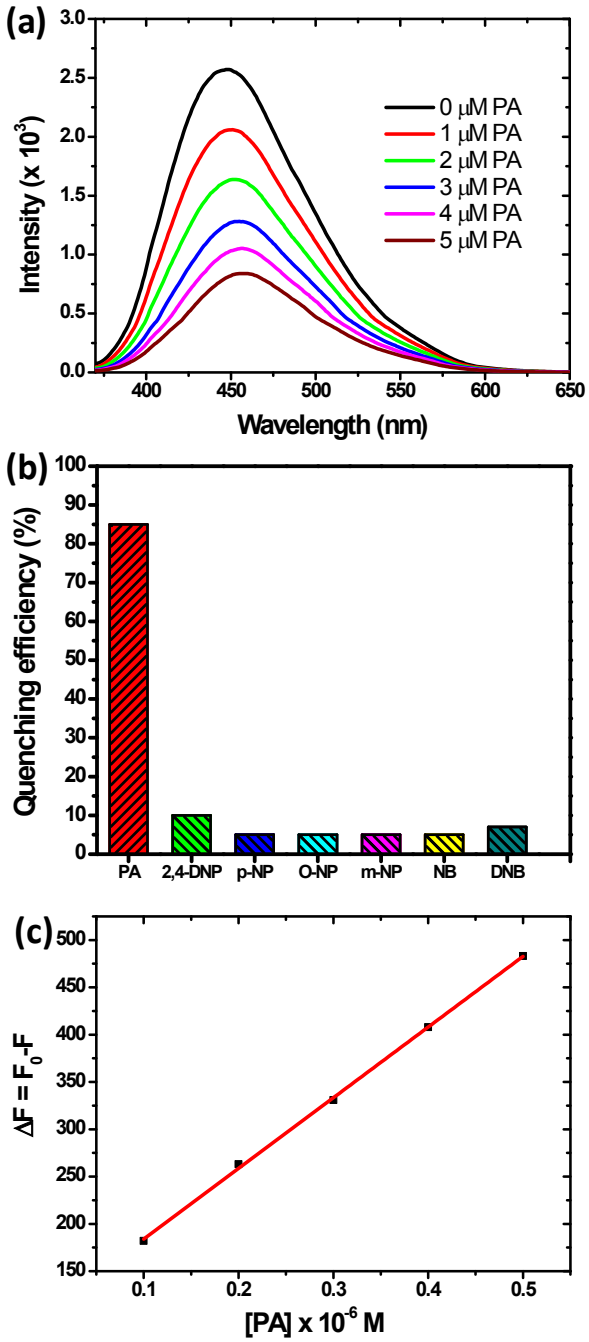


Figure S13: (a) Fluorescence quenching of CDs by various concentrations of PA, (b) Selectivity of CDs towards various nitroaromatics and (c) LOD plot.

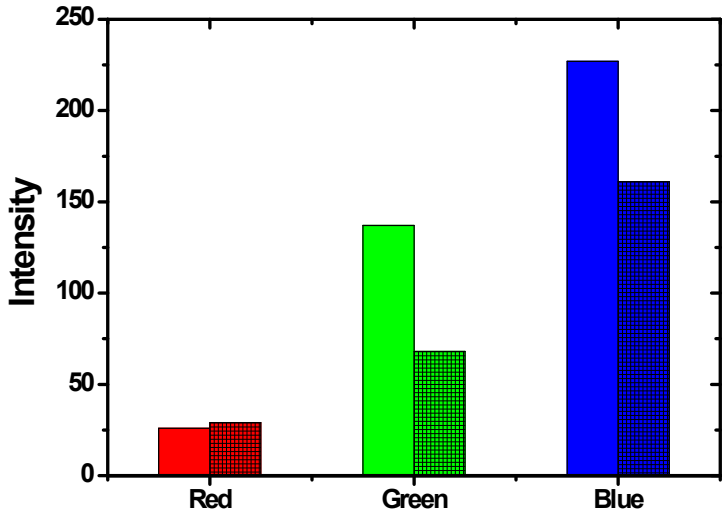
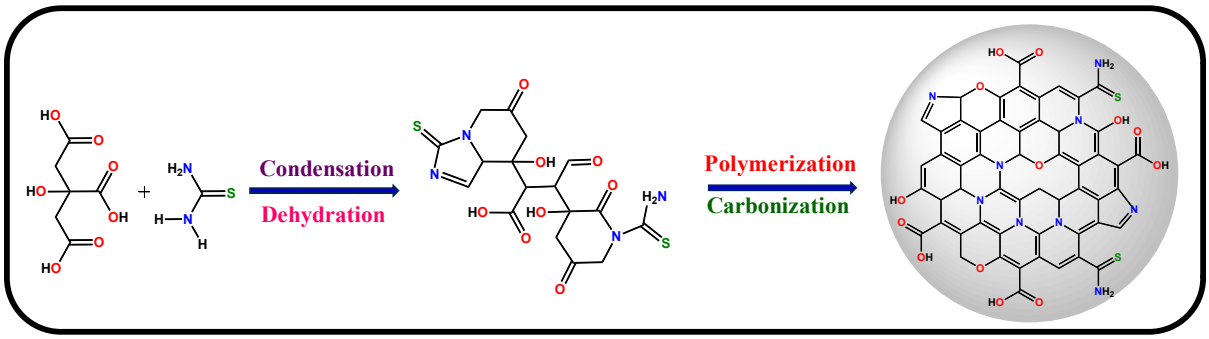


Figure S14: RGB color components of CDs (plain bar) and CDs with PA traces in LFP (patterned bar)



Scheme S1: The proposed mechanism of CDs formation

Table S1: Summary of decay analysis as a function of excitation and emission wavelength. Global fits (global χ^2 =1.170).

Emission wavelength (nm)	Exponential component	A	f (%)	τ (ns)	τ_{av} (ns)	χ^2
380/450	1	0.0789	8.71	1.161	8.5350	1.110
	2	0.0726	34.83	5.046		
	3	0.0526	56.46	11.825		
400/460	1	0.1202	10.75	1.161	7.8605	1.125
	2	0.1070	41.57	5.046		
	3	0.0549	47.68	11.825		
420/500	1	0.0834	8.09	1.161	6.6155	1.232
	2	0.1520	64.12	5.046		
	3	0.0295	27.79	11.825		
440/520	1	0.0806	11.68	1.161	5.8212	1.213
	2	0.1115	70.19	5.046		
	3	0.0129	18.13	11.825		

Table S2: Summary of global analysis as a function of emission wavelength with excitation at 380 nm (global χ^2 =1.078).

Emission wavelength (nm)	Exponential component	A	f (%)	τ (ns)	τ_{av} (ns)	χ^2
420	1	0.0746	10.97	1.003	7.406	1.143
	2	0.0618	45.26	4.997		
	3	0.026	43.77	11.503		
440	1	0.0764	10.11	1.003	7.662	1.066
	2	0.0647	42.71	4.997		
	3	0.0311	47.18	11.503		
460	1	0.0551	7.34	1.003	8.052	1.042
	2	0.062	41.19	4.997		
	3	0.0337	51.47	11.503		
480	1	0.0362	6.64	1.003	8.101	1.066
	2	0.0461	42.87	4.997		
	3	0.0243	51.23	11.503		
500	1	0.0472	6.01	1.003	8.082	1.085
	2	0.0676	42.87	4.997		
	3	0.0350	51.12	11.503		
520	1	0.0463	6.00	1.003	7.828	1.076
	2	0.0724	46.8	4.997		
	3	0.0317	47.2	11.503		
540	1	0.0321	6.29	1.003	7.428	1.148
	2	0.0538	52.47	4.997		
	3	0.0184	41.24	11.503		