

## Supplementary material

### **Ethylenediamine assist preparation of carbon dots with novel biomass for highly sensitive detection of levodopa**

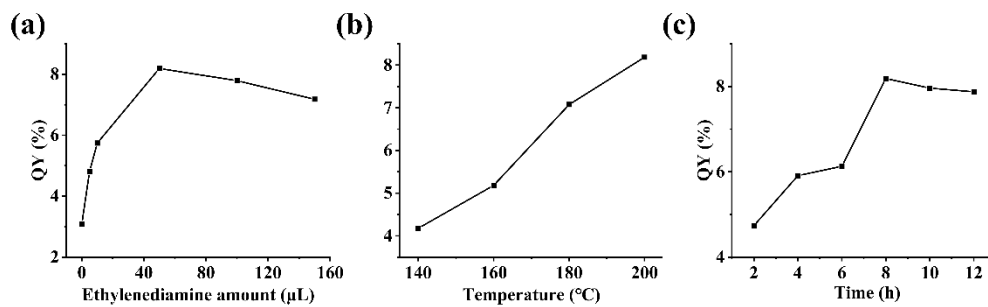
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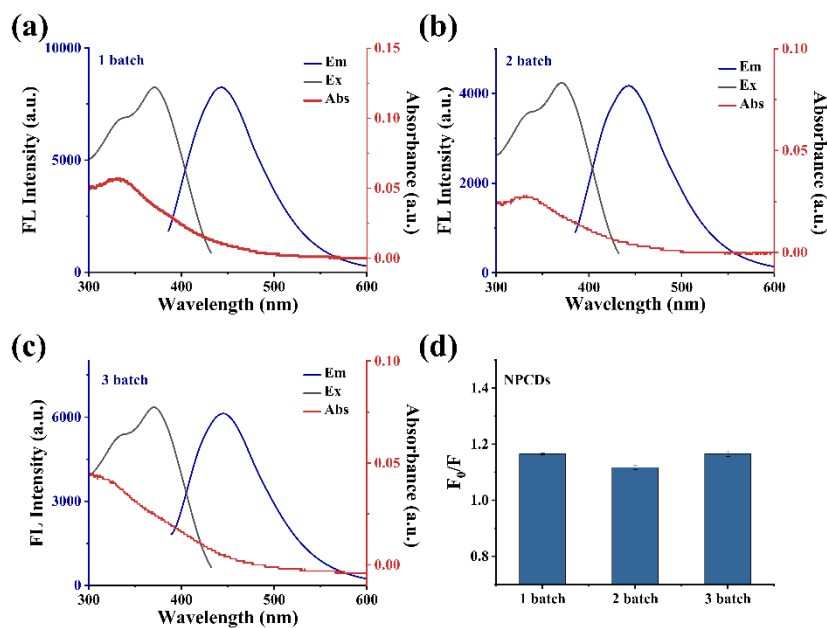
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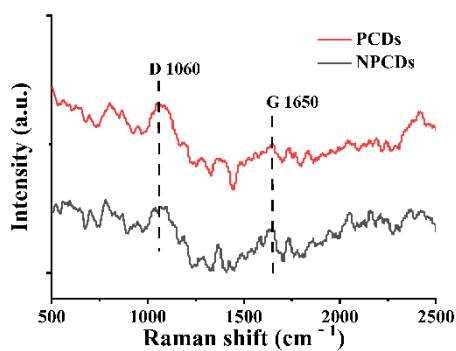
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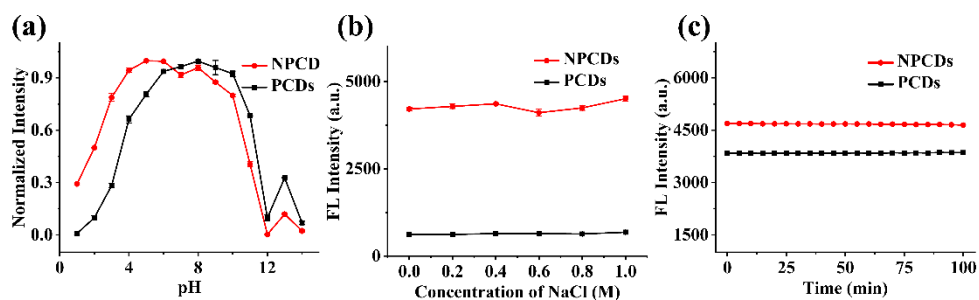
**Fig. S1.** QY of NPCDs prepared with different amounts of EDA (a) at different reaction temperatures (b) and of different reaction time (c).



**Fig. S2.** UV-vis absorption (Abs), excitation (Ex) and emission (Em) spectra of NPCDs of first (a), second (b) and third batch (c). (d) The fluorescence response ( $F_0/F$ ) of different batches of NPCDs towards L-Dopa at 10 μM.



**Fig. S3.** Raman spectra of NPCDs and PCDs.



**Fig. S4.** (a) The normalized fluorescence spectra of NPCDs and PCDs at different pH. Fluorescence intensity of NPCDs and PCDs (b) at different NaCl concentrations and (c) different time under continuous UV irradiation.

**Table S1** The QYs of three batches of NPCDs.

Batch	QY (%)
1	8.18
2	7.96
3	8.19

**Table S2** The content of C, O and N elements in NPCDs and PCDs.

CDs	Content (%)		
	C	O	N
NPCDs	50.51	47.53	1.96
PCDs	58.26	40.82	0.91
Biomass	42.20	50.11	2.02

**Table S3** The parameters of regression equations of calibration curves for different 3 days.

Run	Slope	Intercept	R <sup>2</sup>
1	0.0119	1.0381	0.9945
2	0.0123	1.0242	0.9930
3	0.0119	1.0173	0.9938
Mean	0.0120	1.0265	0.9938
RSD (%)	1.92	1.03	–

**Table S4** Intra-day and inter-day accuracy and precision of the sensor in the detection of L-Dopa. Samples were prepared on same day (n=3) for intra-day assessments, and 3 different days (n=3) for inter-day assessments.

Conc. ( $\mu$ M)	Intra-day			Inter-day		
	Mean $\pm$ SD	Accuracy (%)	Precision (%)	Mean $\pm$ SD	Accuracy (%)	Precision (%)
5	4.61 $\pm$ 0.11	92.11	2.40	5.21 $\pm$ 0.46	104.27	8.89
20	19.37 $\pm$ 0.21	96.83	1.06	19.14 $\pm$ 0.60	95.69	3.12

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60	57.18 ± 1.07	95.31	1.88	59.15 ± 1.80	98.58	3.05
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**Table S5** Detection of L-Dopa in FBS.

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Sample	Added (μM)	Measured (μM)	RSD (%)	Recovery (%)
1	10	9.97	2.99	99.71
2	20	19.70	2.08	98.50
3	60	53.10	2.30	88.50

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