Supplementary Information

Photoluminescent carbon dots derived from sugarcane molasses: synthesis, properties, and applications

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Supplementary Figures

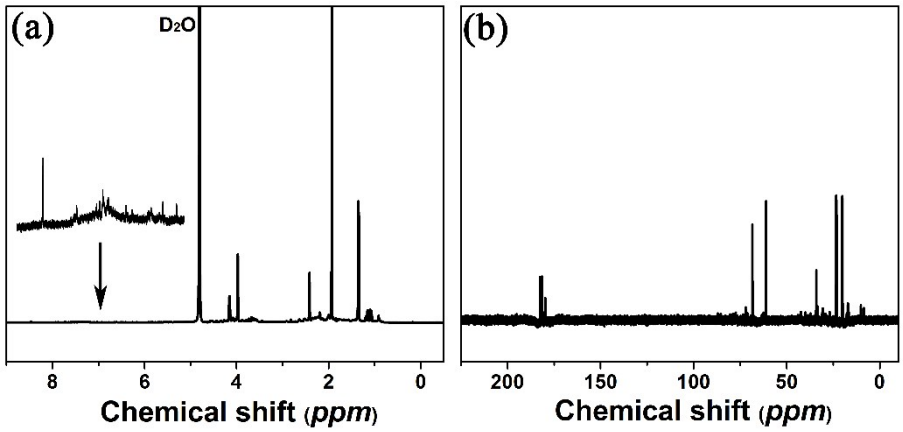

Fig. S1. (a) ^{1}HNMR; (b) ^{13}CNMR spectra of C-dots

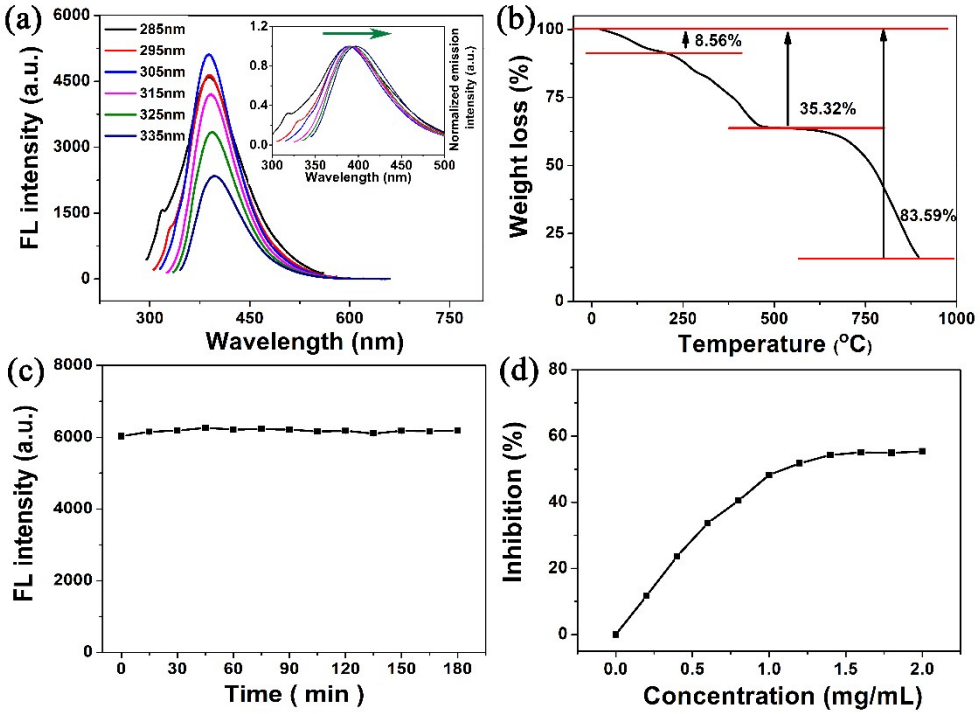

Fig. S2. (a) Excitation wavelength-dependent fluorescence spectra of C-dots (0.25 mg/mL); (b) TGA analysis; (c) Photobleaching characteristics; (d) DPPH free radical scavenging activity

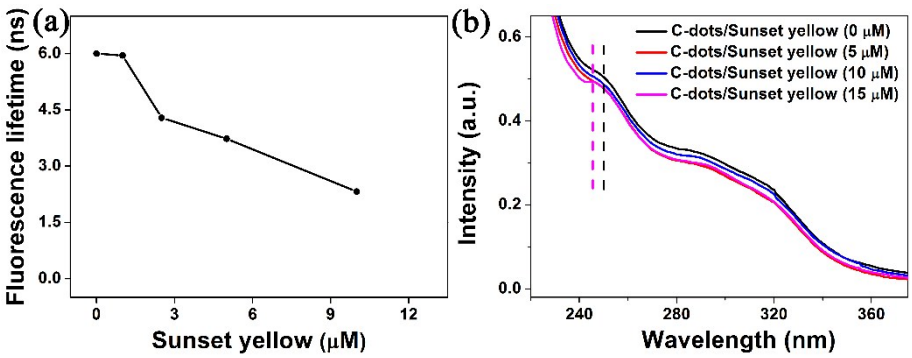

Fig. S3. (a) Fluorescence lifetime of C-dots (0.01 mg/mL) with addition of sunset yellow; (b) UV-vis spectra of C-dots and sunset yellow

Table S1. The fluorescence lifetime of C-dots (0.01 mg/mL) with various concentrations of sunset yellow

Sunset yellow (μM)	Fluorescence lifetime (ns)
0	6.00
1	5.95
2.5	4.92
5	3.73
10	2.32

Table S2. Comparison of different methods for Fe^{3+} and sunset yellow determination

Determination	Method	Sensor	LOD (μM)	Ref.
Fe^{3+}	Fluorescence	Carbon dots with L-glutamic acid	4.67	1
Fe^{3+}	Fluorescence	Carbon dots with melamine and citric	0.142	2
Fe^{3+}	Fluorescence	Carbon dots with papaya powder	W-C-dots；0.48, E-C-dots；0.29	3
Fe^{3+}	Fluorescence	Carbon dots with amino acid	0.054	4
Fe^{3+}	Fluorescence	Carbon dots with trypsin and dopamine	0.03	5
Fe^{3+}	Fluorescence	Carbon dots with citric acid and Tris	1.3	6
Fe^{3+}	Fluorescence	Carbon dots derived from sugarcane molasses	1.46	This work
Sunset yellow	HPLC	---	3.31×10^{-5}	7
Sunset yellow	Electroanalytical techniques	---	0.025	8
Sunset yellow	spectrophotometry	---	0.019	9
Sunset yellow	Enzyme-linked immunosorbent assay	---	1.15×10^{-3}	10

Sunset yellow	Differential pulse voltammetry	---	0.005	11
Sunset yellow	Fluorescence	Carbon dots with sugarcane molasses	0.399	This work

References

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