Supporting Information for

Improved photodegradation of superabsorber via carbon dots as electron transfer station

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Content List

SI1. Raman spectrum of CDs

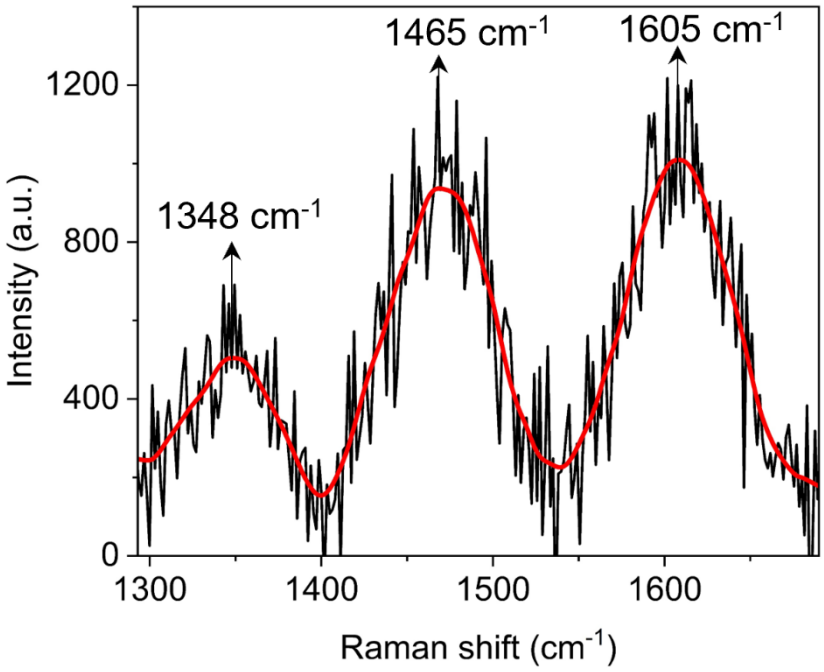

Figure S1. Raman spectrum of as-synthesized CDs.

SI2. FTIR spectra of chemicals and as-synthesized CDs

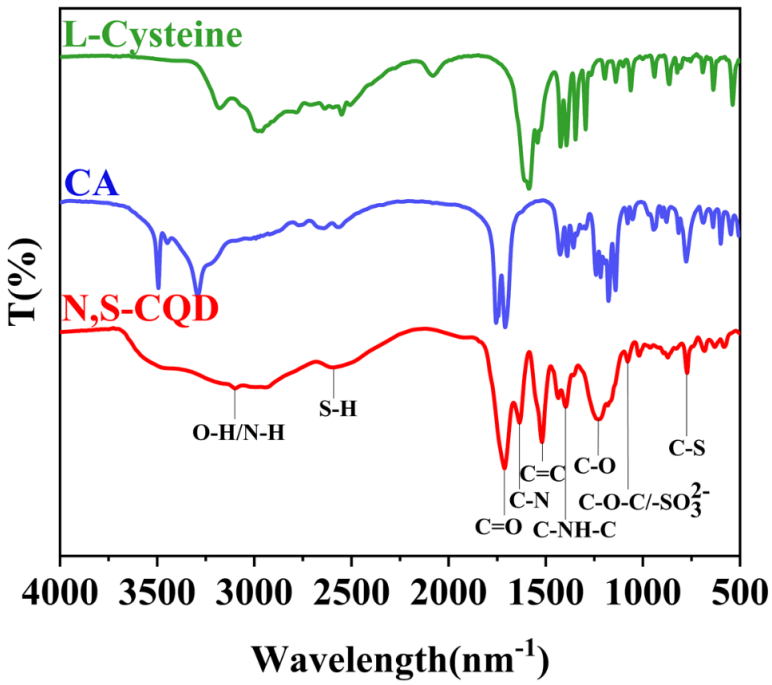

Figure S2. FTIR spectra of CA, L-Cysteine and the as-synthesized CDs.

SI3. UV-vis absorption, PL and PLE spectra of CDs.

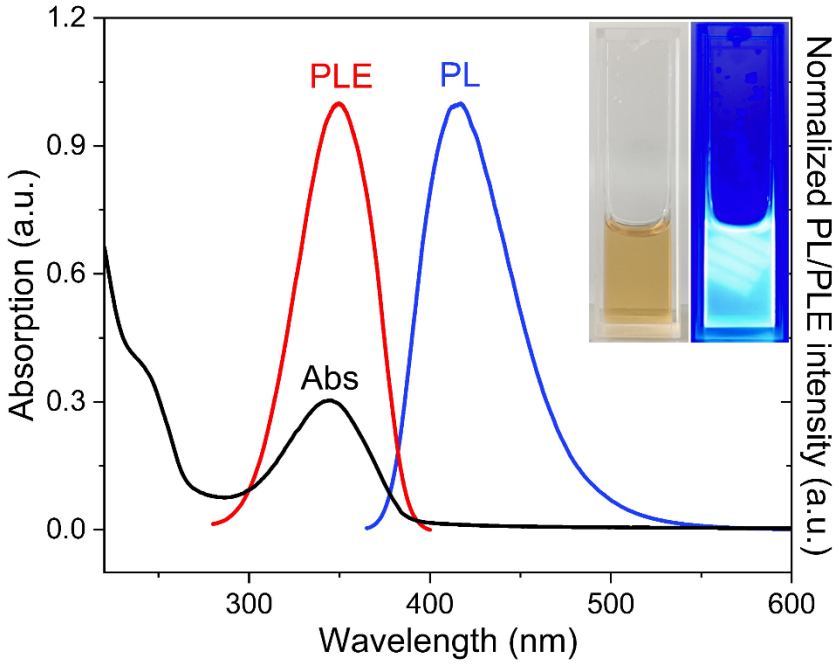

Figure S3. UV-vis absorption, PL and PLE spectra of as-synthesized CDs. Insert is the images of CDs aqueous solution with and without UV irradiation.

SI4. Photodegradation efficiency of PAA-Na in all systems.

Table S1. Photodegradation efficiency of PAA-Na in all systems under UV irradiation within 10 min.

time/min systems	0	4	6	8	10
PAA-Na	0	0.678	0.792	0.857	0.954
PAA-Na+CDs	0	0.696	0.836	0.872	0.962
PAA-Na+TiO_2	0	0.552	0.691	0.816	0.932
PAA-Na+TiO_2+CDs	0	0.852	0.918	0.96	0.983

SI5. Transient emission (TE) kinetics fitting method and results.

TE decay kinetics for all samples at specific emission wavelengths (Figure 5d-5j) are fitted by single exponential decay function which is

$$y = A\exp\left(-\frac{x}{\tau}\right) + y \qquad Eq.S1$$

Fitting results are listed in Table S2.

Table S2. TE kinetics fitting results of all systems.

parameters / systems	A	y_0	τ/ns	Adj.R^2
PAA-Na	-208.51	-1.98	9.98	0.995
CDs	-763.71	1.44	25.5	0.990
TiO_2	-1458.60	-0.88	5.71	0.994
PAA-Na+ CDs	-176.39	-0.67	17.88	0.998
PAA-Na+TiO_2	-1532.69	-1.03	6.27	0.995
PAA-Na+CDs+TiO_2	-582.32	-1.49	4.97	0.993
CDs+TiO_2	-1037.95	-0.87	5.22	0.993

SI6. Transient absorption (TA) spectra.

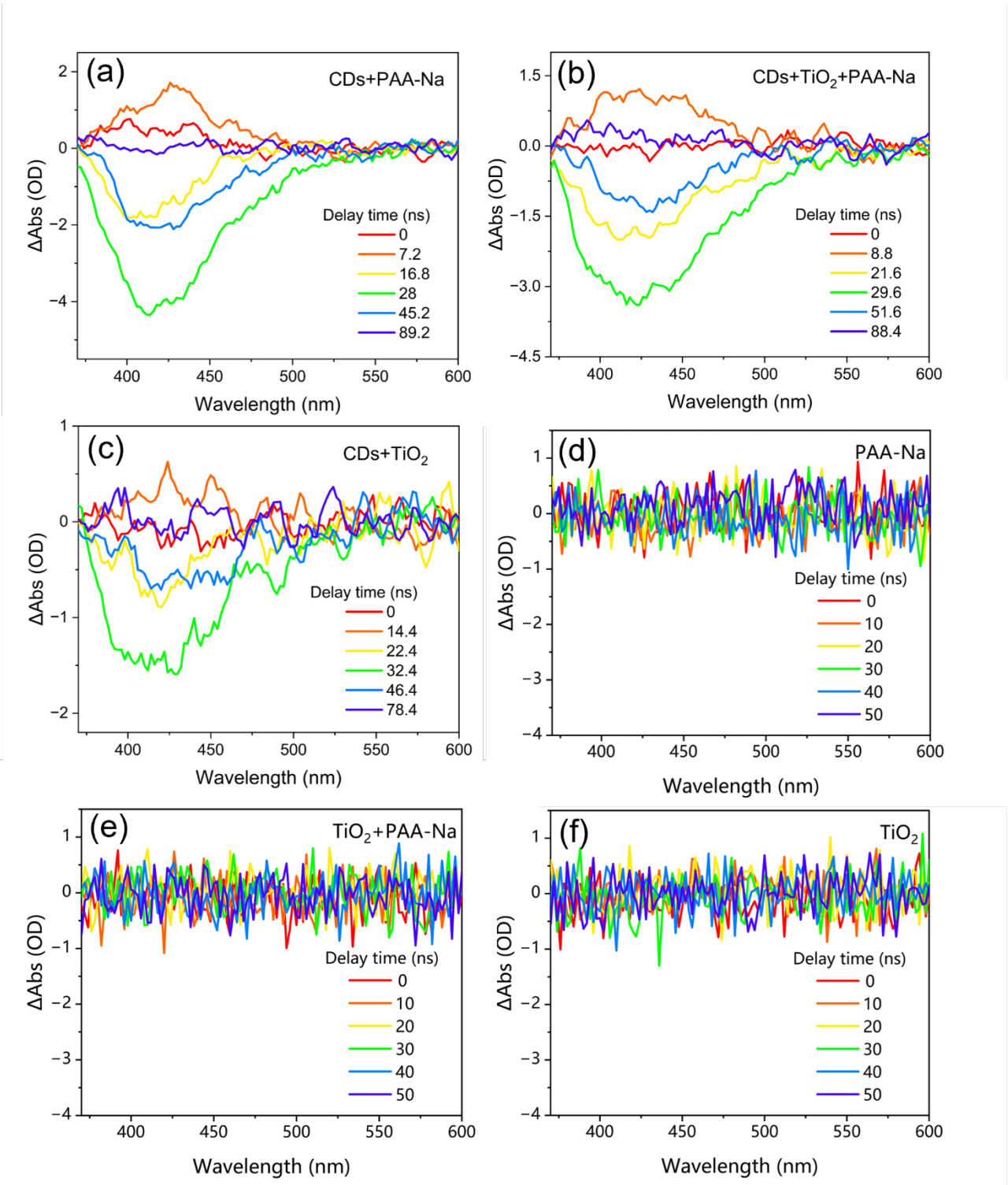

Figure S4. TA spectra (excited @ 365 nm) in 380-600 nm region of different systems at different delay times ranging from 0 ns to 89 ns.

SI7. TA kinetics fitting method and results.

TA kinetics in Figure 6(c-f) are fitted by single exponential decay function (Eq. S1) and detailed fitting results are listed in Table S3.

Table S3. TA kinetics fitting results.

parameters / systems	A	y_0	τ/ns	Adj.R^2
CDs	-19.92	0.09	14.27	0.78
CDs+TiO_2	-18.37	0.18	14.82	0.79
CDs+PAA-Na	-26.40	0.04	15.95	0.91
CDs+TiO_2+PAA-Na	-27.25	0.06	15.23	0.88

SI8. Comparison of TE and TA kinetics of CDs.

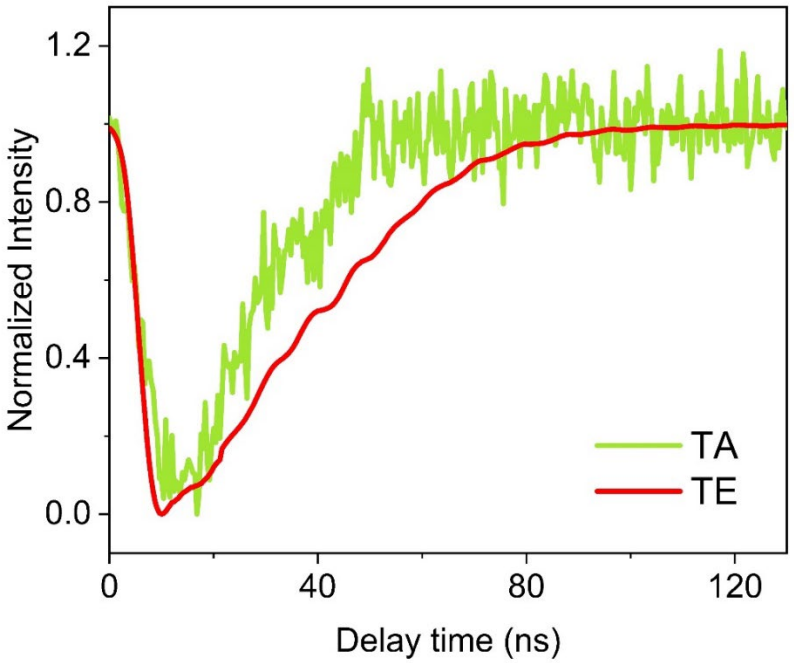

Figure S5. Normalized TE (@422 nm) and TA (@420 nm) kinetics (excited @ 365 nm) of CDs.