

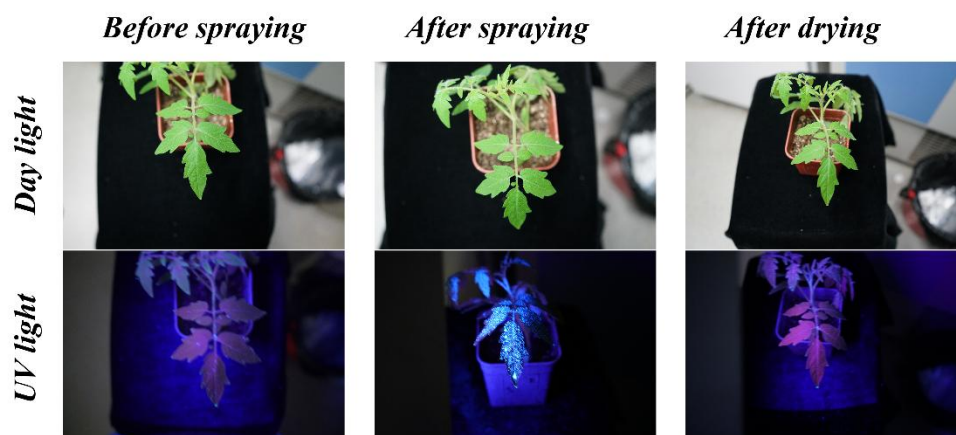
## **Electronic Supplementary Information (ESI)**

### **New strategy of light quality regulation with leaf-spraying fluorescent coatings for enhancing photosynthesis efficiency**

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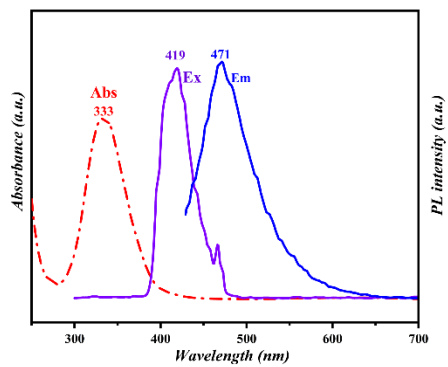


**Fig. S1** Images of tomato seedlings under day light (top) and UV light (bottom) before or after spraying DETA-CD nanomaterial (40 mg/L, 0.2 mL).

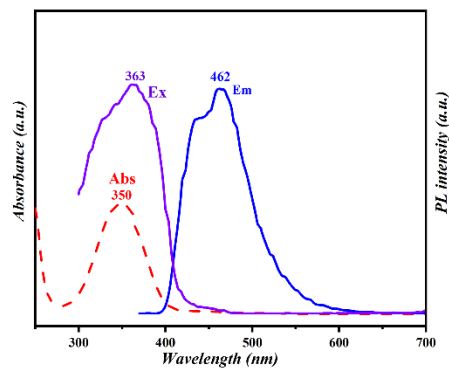


**Fig. S2** Photographic images of coating powder through the polymerization of TA with DETA-CD under UV light of 365 nm (top) and daylight (bottom). The copolymerization between DETA-CD and TA resulted in the disappearance of fluorescence capacity.

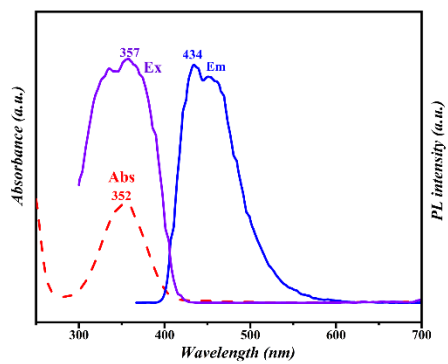
U-CDs



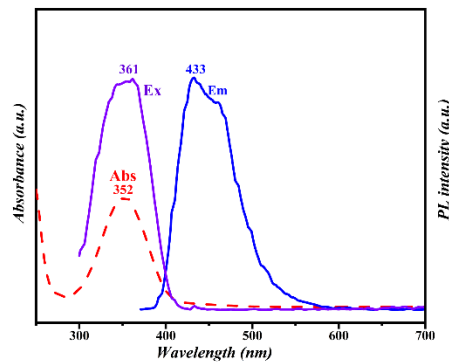
EDA-CDs



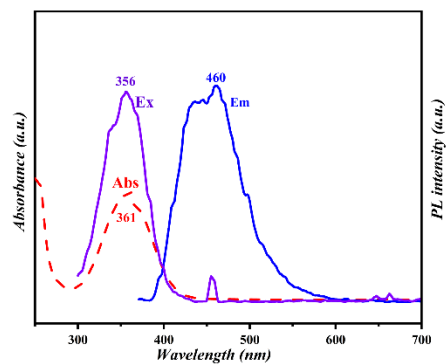
DETA-CDs



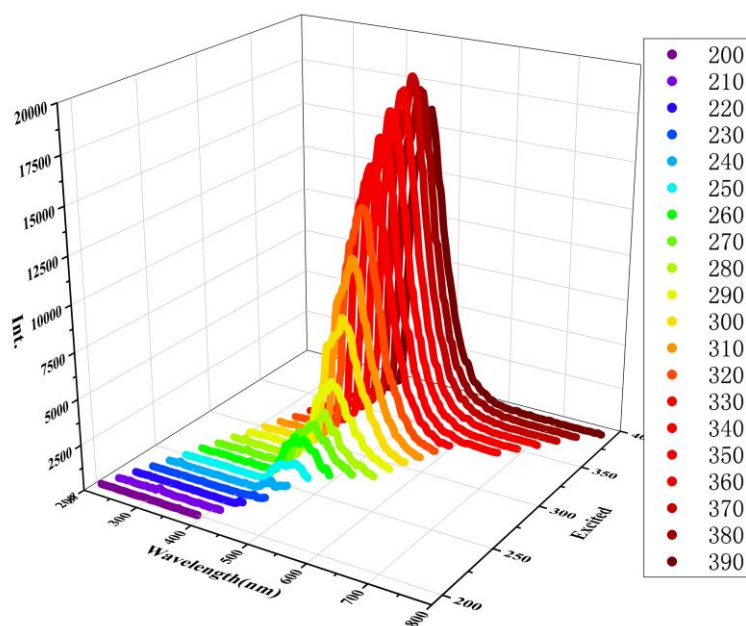
TEPA-CDs



600-CDs

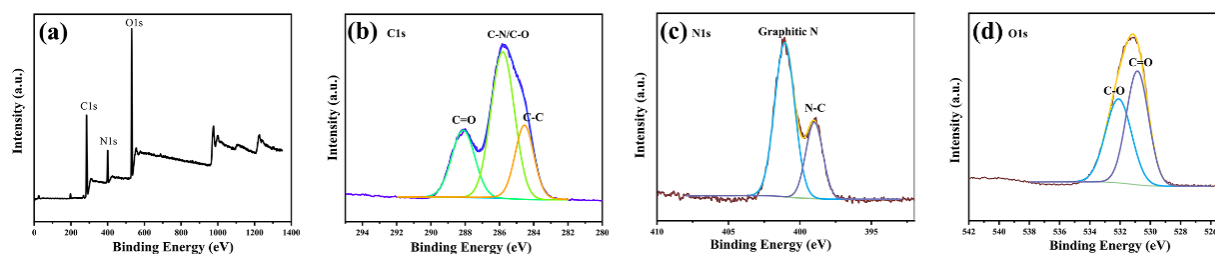


**Fig. S3** UV-Vis and fluorescence spectra of U-CDs, EDA-CDs, DETA-CDs, TEPA-CDs, 600-CDs.

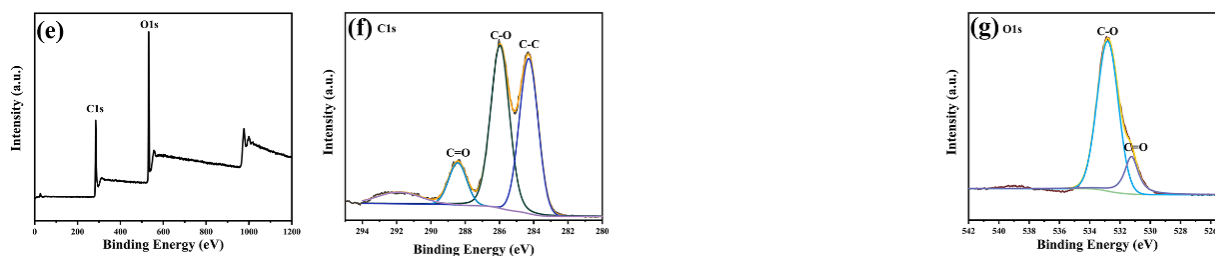


**Fig. S4** Fluorescent behavior of 1800-CDs under different UV light radiation.

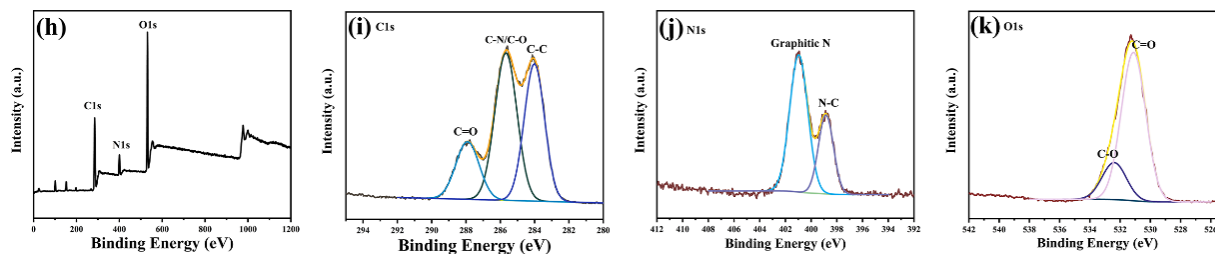
**1800-CD:**



**TA:**

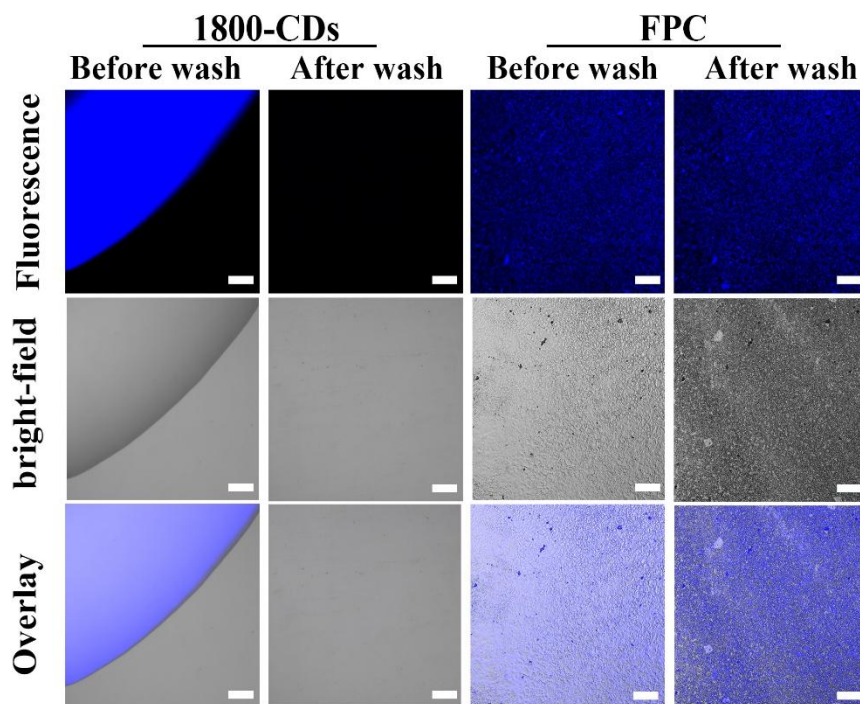


**FPC:**



**Fig. S5** XPS characterizations of 1800-CD, tannic acid and FPCs.

The high-resolution XPS spectra of 1800-CDs contained two N 1s peaks at 400.0 and 401.1 eV, which corresponded to amino N (C-N) and graphitic N, respectively.



**Fig. S6** Confocal microscopy image of FPCs on the smooth glass surface before and after washing (scale bar: 100  $\mu\text{m}$ ).

**Video S1** Washing-out resistance of FPC on leaves under simulated rain erosion (For more details, see the Supplementary Video S1)