Supplementary Information (SI) for New Journal of Chemistry.

Nitrogen doping on fluorescent carbon dots synthesized from lychee exocarps for applications in UV tube down-conversion and pH-responsive curcumin delivery

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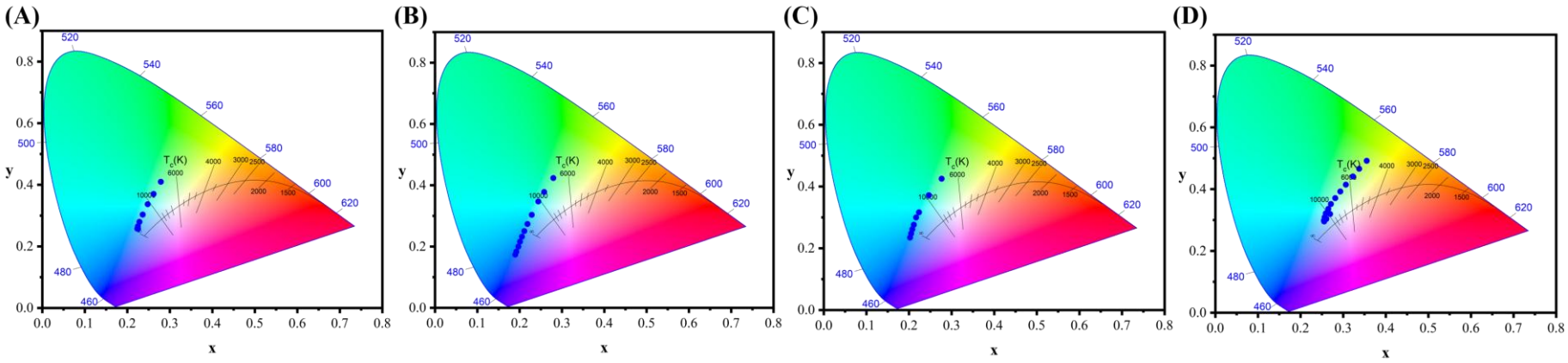

Fig. S1. CIE color coordinates of (A) free N-doped CDs (excitation wavelength from 340 to 410 nm); (B) CD1(excitation wavelength from 320 to 420 nm); (C) CD2 (excitation wavelength from 360 to 430 nm); and (D) CD3 (excitation wavelength from 300 to 430 nm).

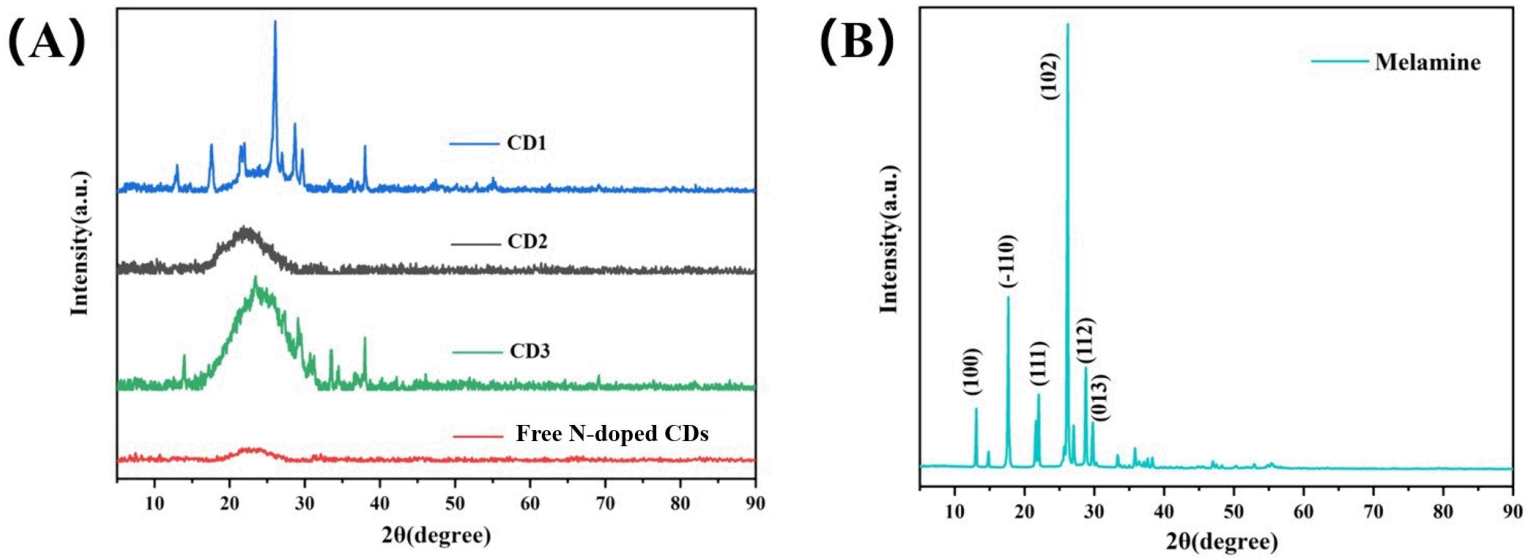

Fig. S2. (A) XRD patterns of CD1, CD2, CD3, and free N-doped CDs; (B) XRD pattern of melamine.

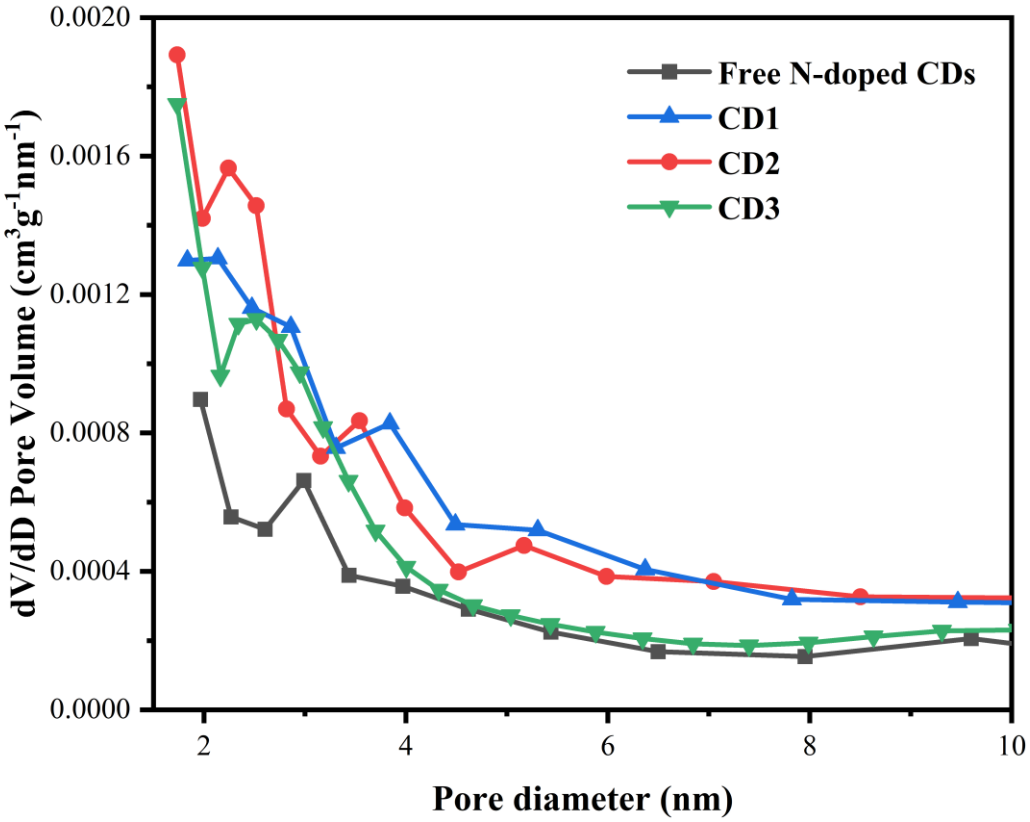

Fig. S3. The pore size distribution curve of the CD1, CD2, CD3, and free N-doped CDs.

Table S1. The results of pore volume, average pore size, and drug encapsulation efficiency of CDs .

Sample	Pore volume (cm^3g^{-1})	Average pore size (nm)	Drug encapsulating (%)
Free N-doped CDs	0.03034	12.6841	42
CD1	0.07289	13.4926	30
CD2	0.02968	13.7147	60

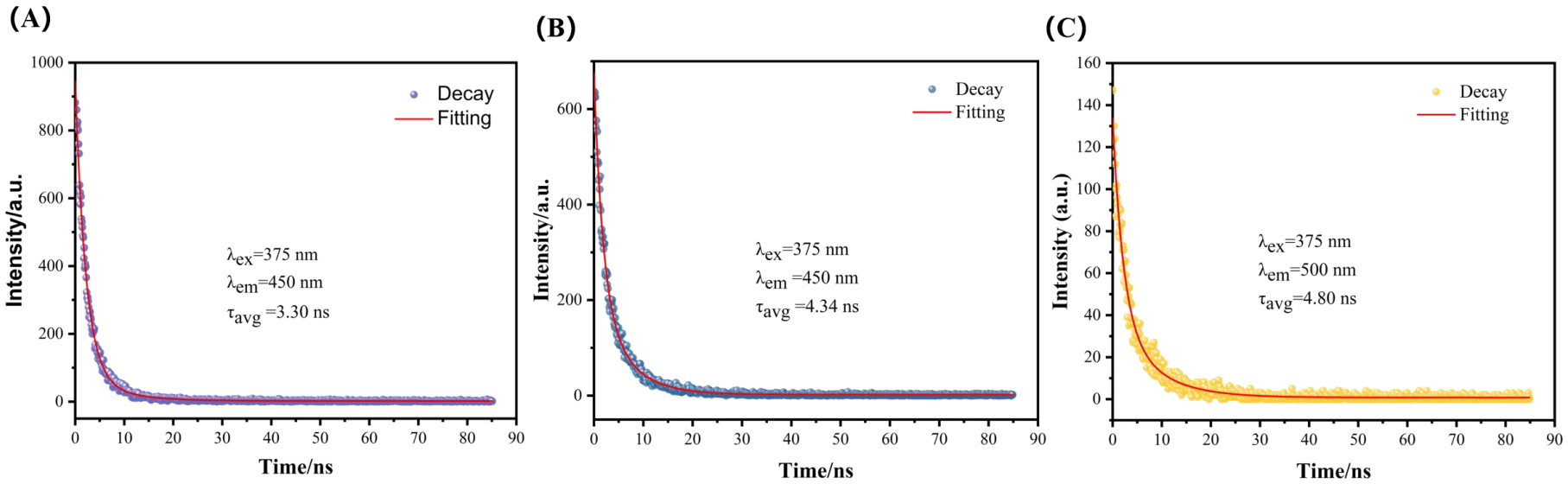

Fig. S4. Time-resolved phosphorescence decay and fitting curve (red line) of free N-doped CDs (A); CD1 (B); and CD2 (C).

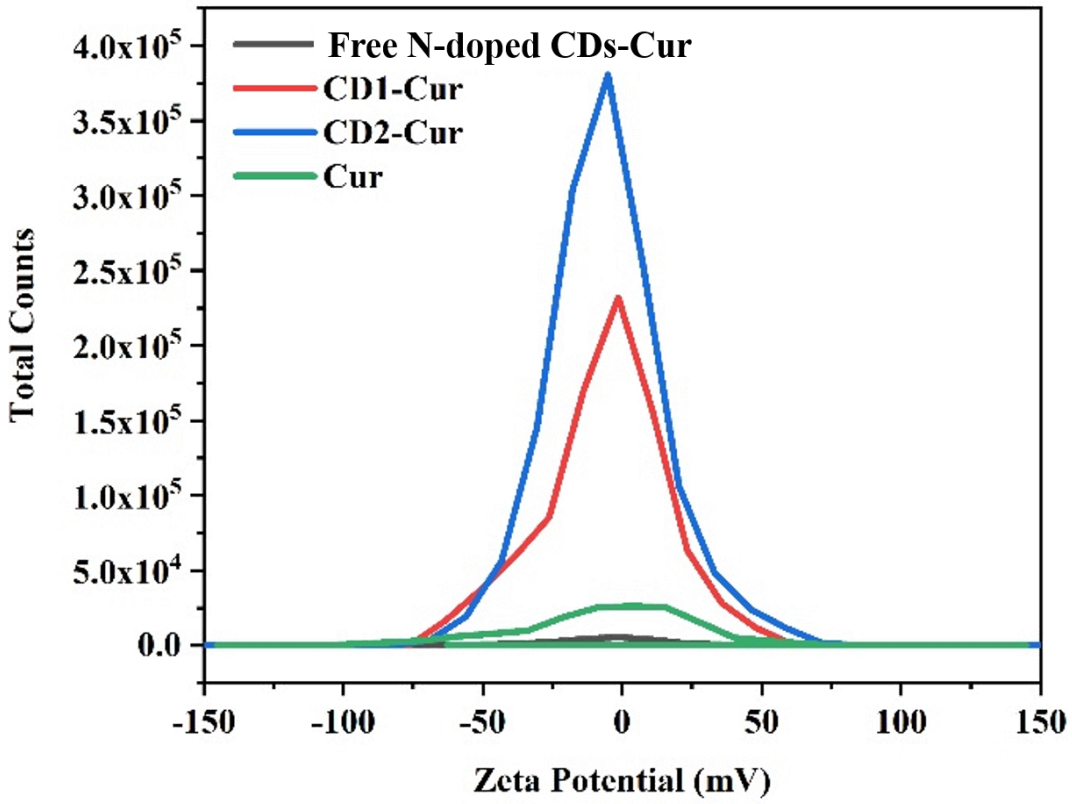

Fig. S5. Zeta potential of CDs-Cur and Cur.

Table S2. Zeta potential of CD1, CD2, and free N-doped CDs before and after loading curcumin.

Sample	Zeta Potential (mV)
Free N-doped CDs	-30
CD1	-27
CD2	-21
Free N-doped CDs-Cur	-4.44
CD1-Cur	-6.28
CD2-Cur	-5.72
Curcumin	-5.56

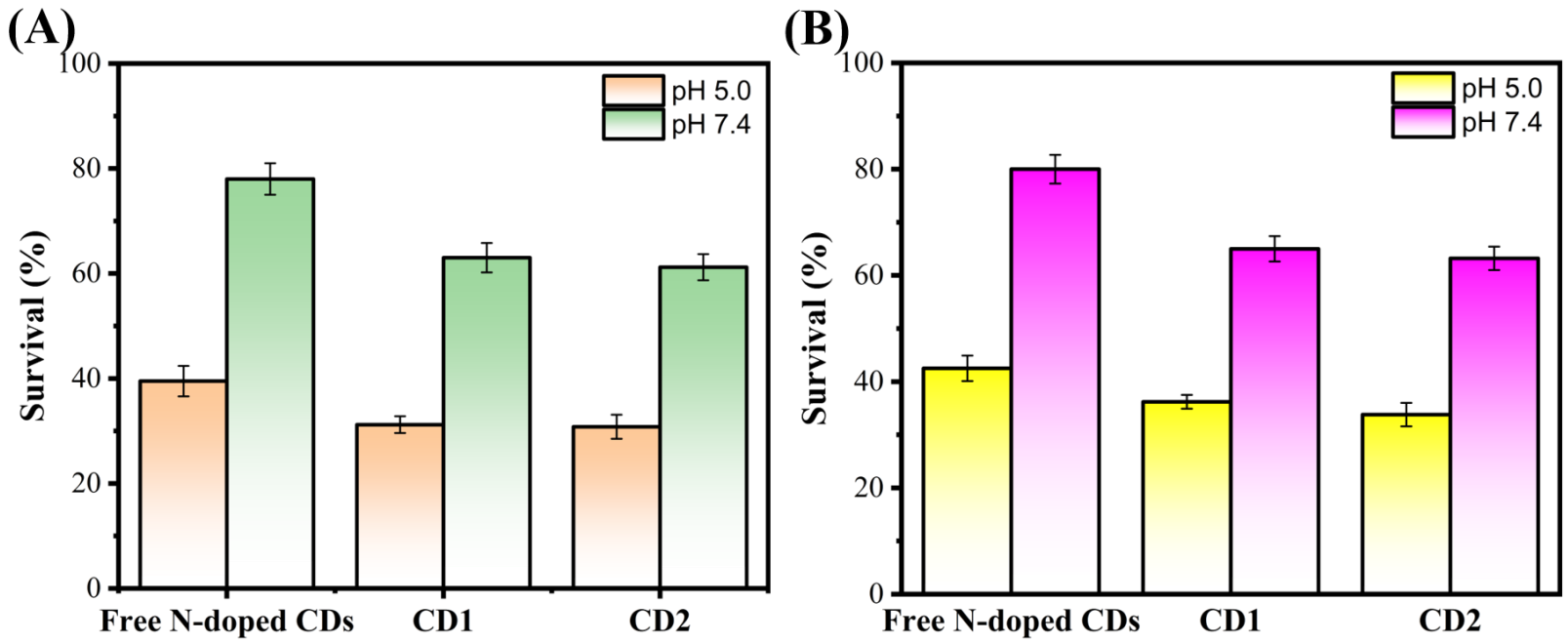

Fig. S6. (A) Survival rate for *E.coli* at pH= 5.0 and 7.4; (B) survival rate for *S. aureus* at pH= 5.0 and 7.4.

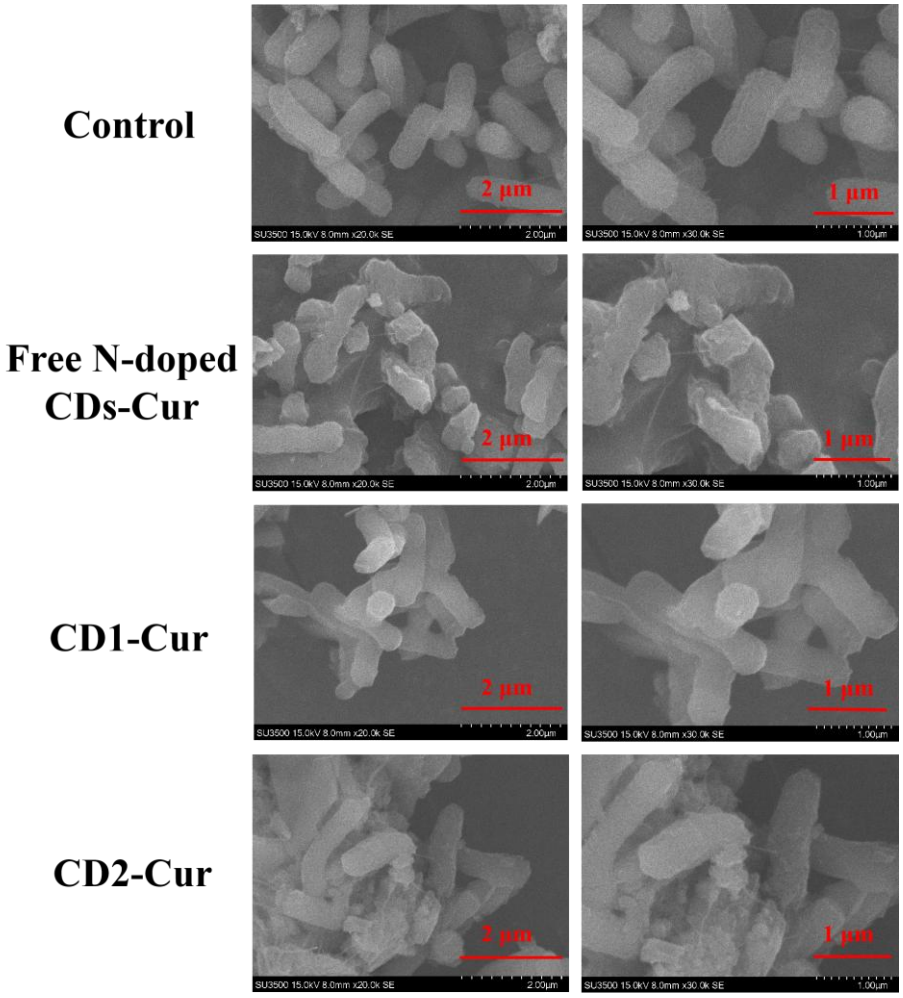

Fig. S7. SEM images of *E. coli* treated with CDs-Cur.

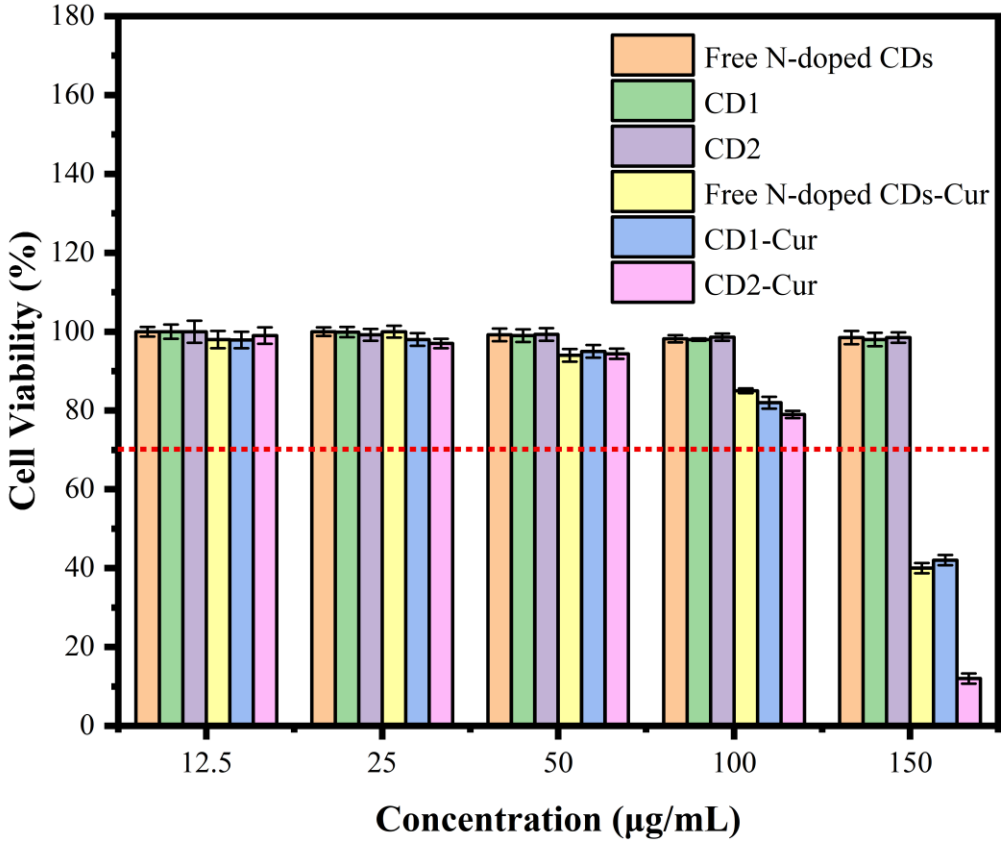

Fig. S8. Relative viability of the HUVEC cells.

Table S3. Correlation coefficients of Cur release models in the CD1, CD2, and free N-doped CDs.

Models	CD1		CD2		Free N-doped CDs	
	pH=5.0	pH=7.4	pH=5.0	pH=7.4	pH=5.0	pH=7.4
Zero-order model	0.86535	0.90076	0.7322	0.94678	0.64318	0.94678
First-order model	0.96921	0.96714	0.95465	0.9783	0.95064	0.90508
Higuchi model	0.93017	0.92808	0.87643	0.93651	0.82999	0.72384
Korsmeyer-Peppas model	0.92703	0.93661	0.86964	0.96431	0.84126	0.76382
	n=0.67	n=0.74	n=0.52	n=0.80	n=0.43	n=0.36

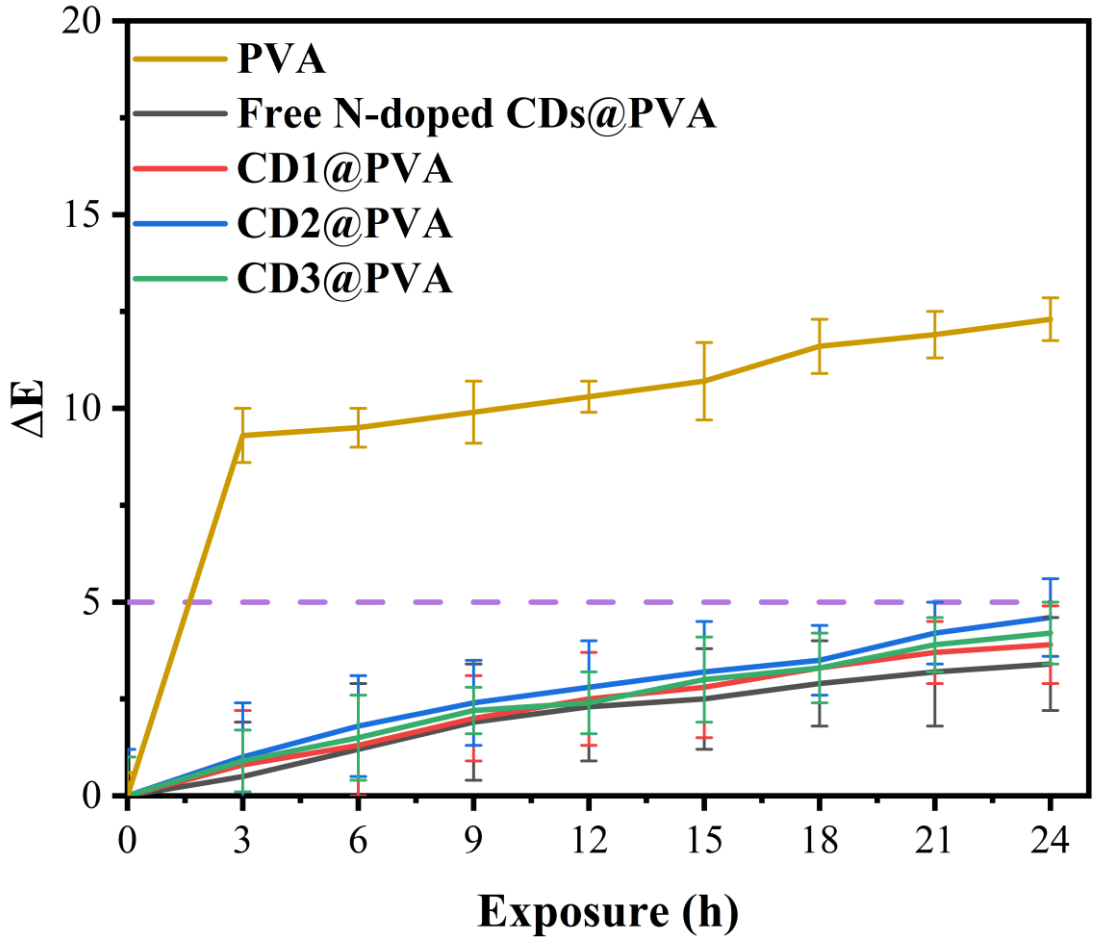

Fig. S9. Color changes of the PVA and CDs@PVA films upon UV irradiation.

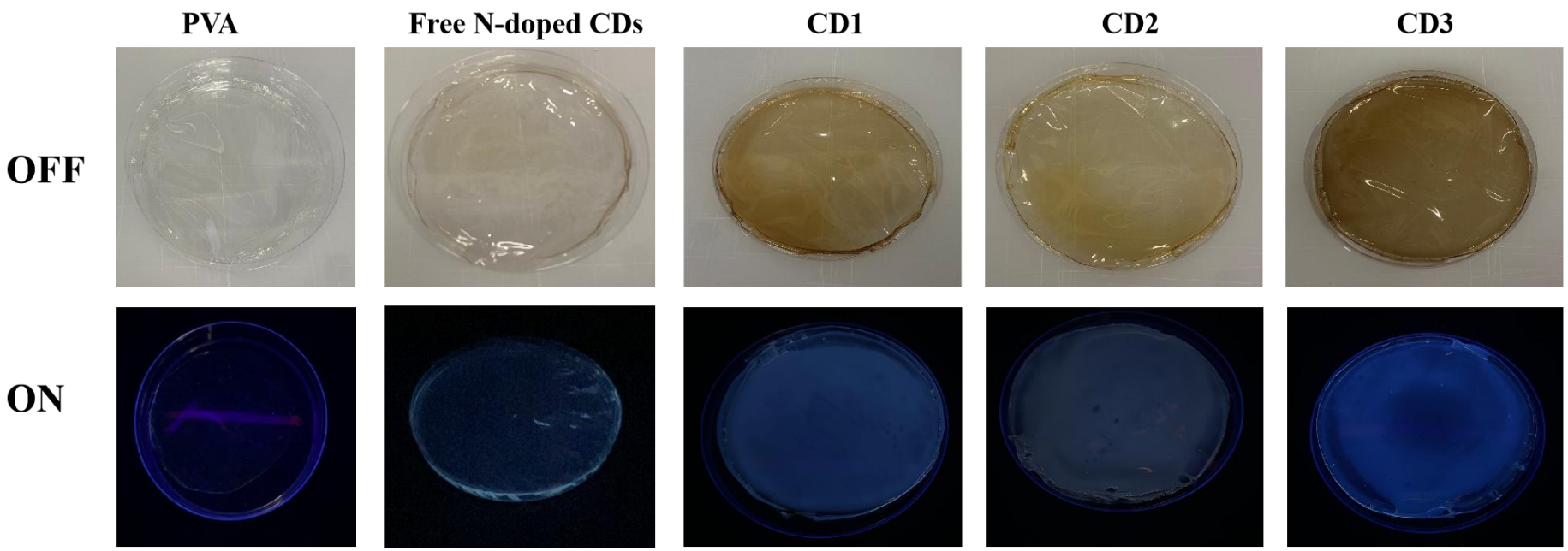

Fig. S10. Digital photographs of fabricated CDs@PVA films that was exposed to commercially available UV tube (365 nm, 8 W) during OFF and ON condition.