Supporting Information

Red and yellow emissive carbon dots integrated tandem luminescent solar concentrators with significantly improved efficiency

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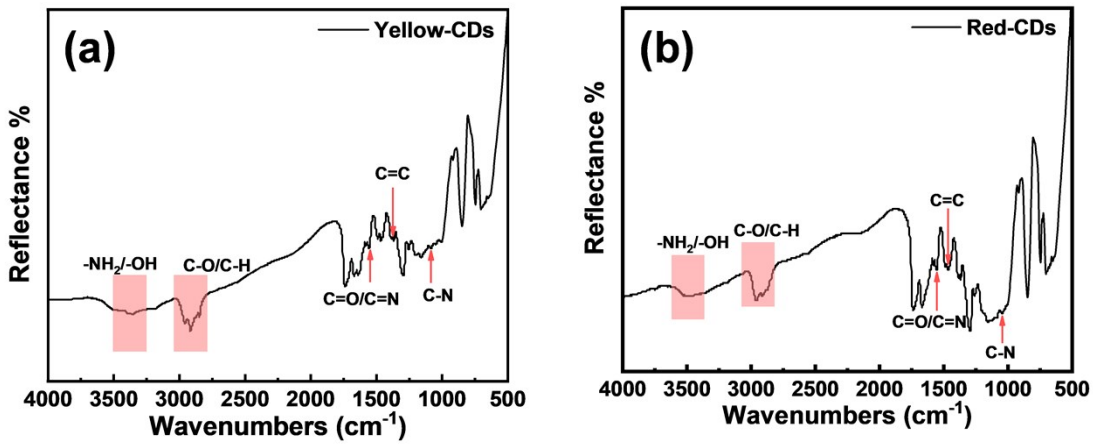

Figure S1 FTIR spectra of the synthesized Y-CDs (a), and R-CDs (b).

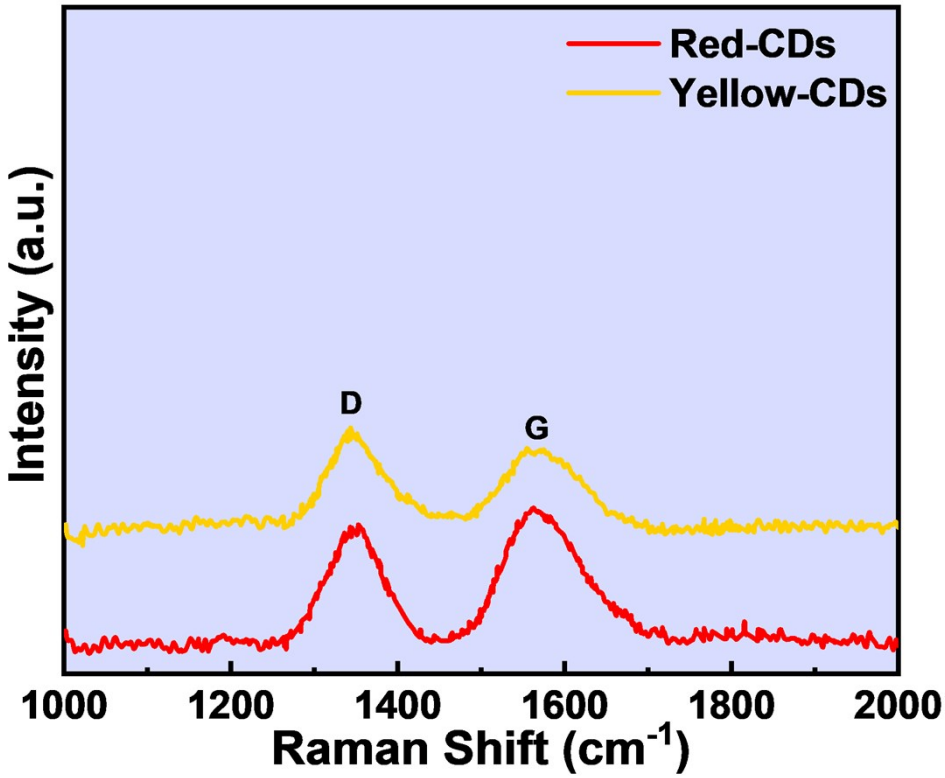

Figure S2 Raman spectra of the synthesized CDs.

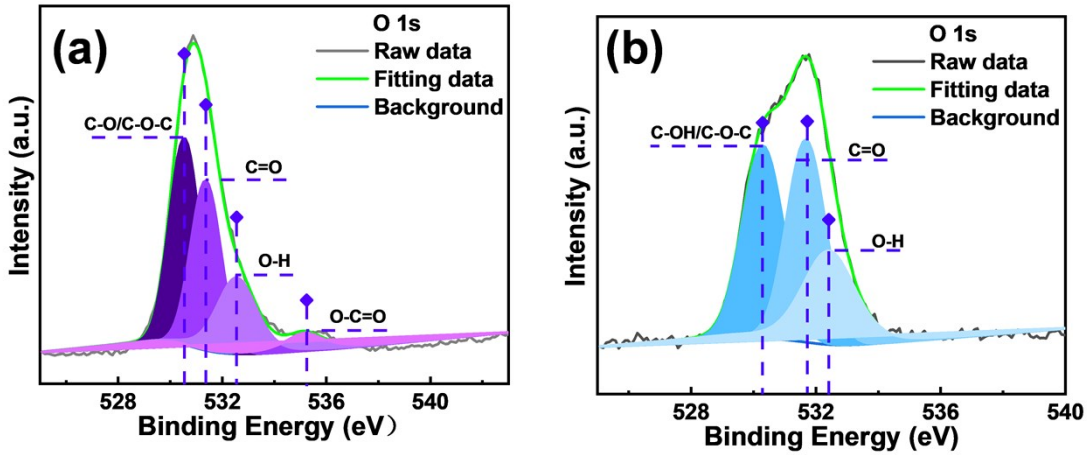

Figure S3 High-resolution XPS O 1s of the synthesized Y-CDs (a), and R-CDs (b).

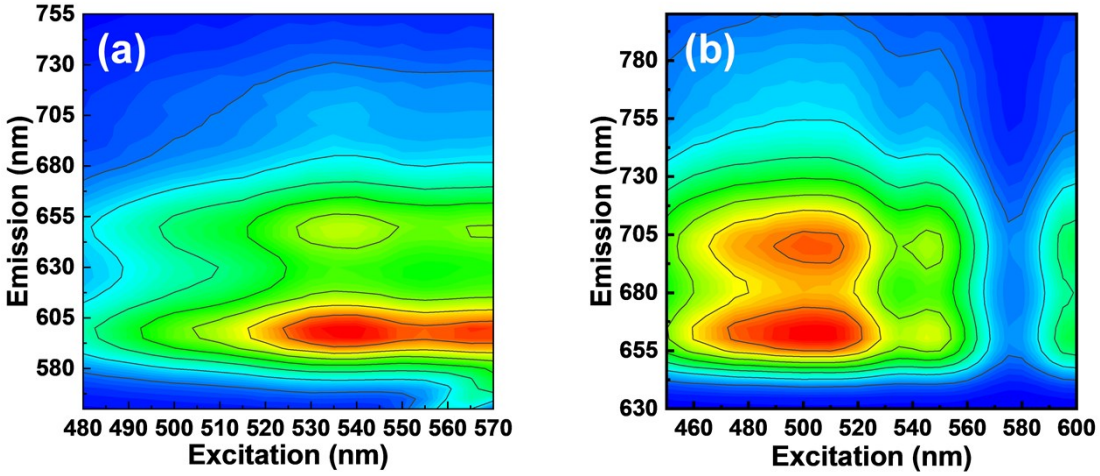

Figure S4 Excitation-emission mapping of the synthesized Y-CDs (a), and R-CDs (b).

Table S1 Biexponential fitting of lifetime data for Y-CDs and R-CDs in the different emission wavelengths.

Type	Y-CDs		R-CDs	
Excitation	545 nm		555 nm	
Emission	549 nm	646 nm	650 nm	700 nm
τ_1 (ns)	2.04	0.17	1.53	1.44
τ_2 (ns)	0.22	2.01	1.53	1.44
$\tau_{av.}$ (ns)	2.01	1.96	1.53	1.44

The average lifetime was calculated through the following equation:

$$\tau = \frac{A_1\tau_1^2 + A_2\tau_2^2}{A_1\tau_1 + A_2\tau_2} \qquad \text{(Equation S1)}$$

References

[1] S. Lu, L. Sui, J. Liu, S. Zhu, A. Chen, M. Jin, B. Yang, *Adv. Mater.*, 2017, **29**, 1603443.

[2] B. Wang, J. Li, Z. Tang, B. Yang and S. Lu, *Sci. Bull.*, 2019, **64**, 1285-1292.

[3] H. Zhao, G. Liu, S. You, F. V. A. Camargo, M. Zavelani-Rossi, X. Wang, C. Sun, B. Liu, Y. Zhang, G. Han, A. Vomiero and X. Gong, *Energy Environ. Sci.*, 2021, **14**, 396-406