Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Supporting Information:

Microwave-assisted *in situ* large scale synthesis of carbon dot@g-C_3N_4 composite phosphor for white light-emitting devices

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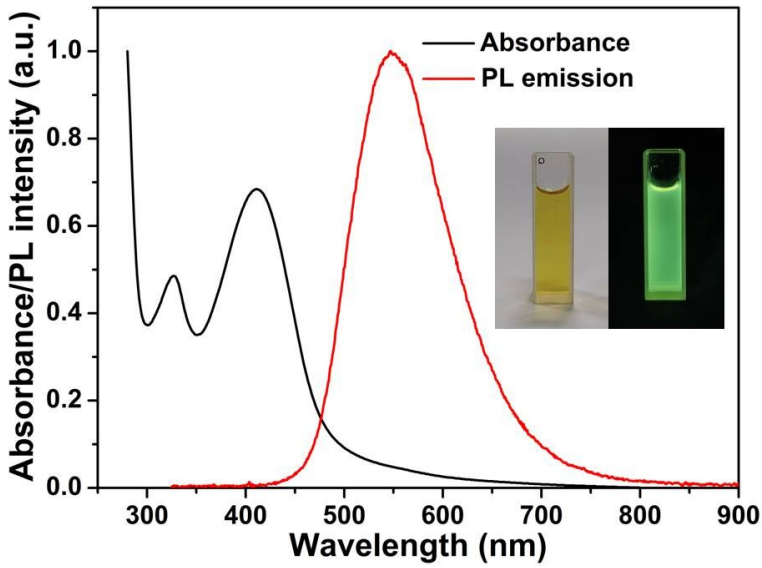

Figure S1. UV-vis absorption and PL spectra (excited at 405 nm) of aqueous solution of CDs. Inset shows photographs of the CD solutions taken under visible and UV light, respectively.

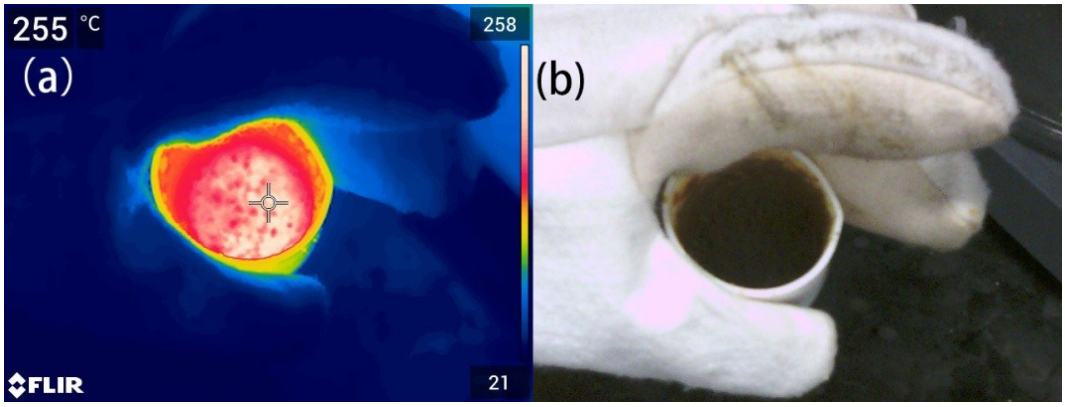

Figure S2. Thermal image (a) and photograph (b) of the product taken out from the microwave oven after microwave heating.

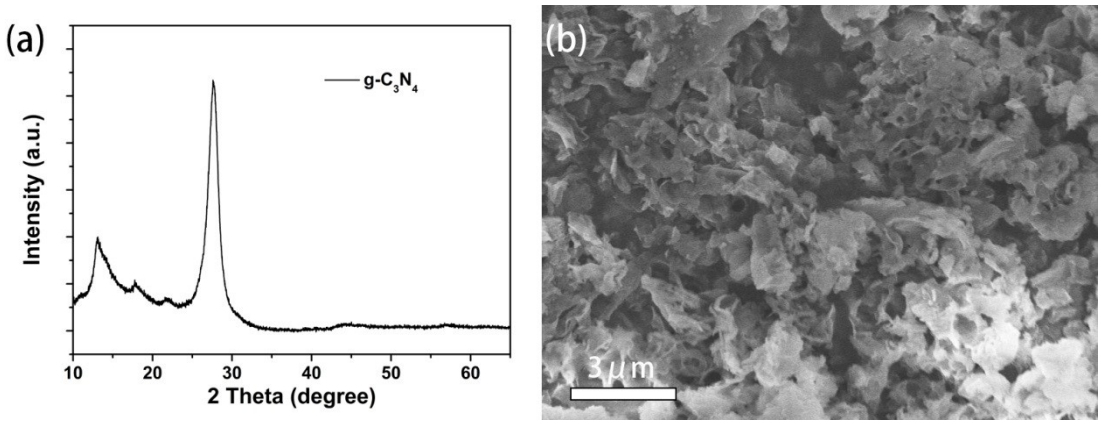

Figure S3. (a) XRD patterns and (b) SEM image of g-C_3N_4 prepared from urea through tube furnace heating at 550℃.

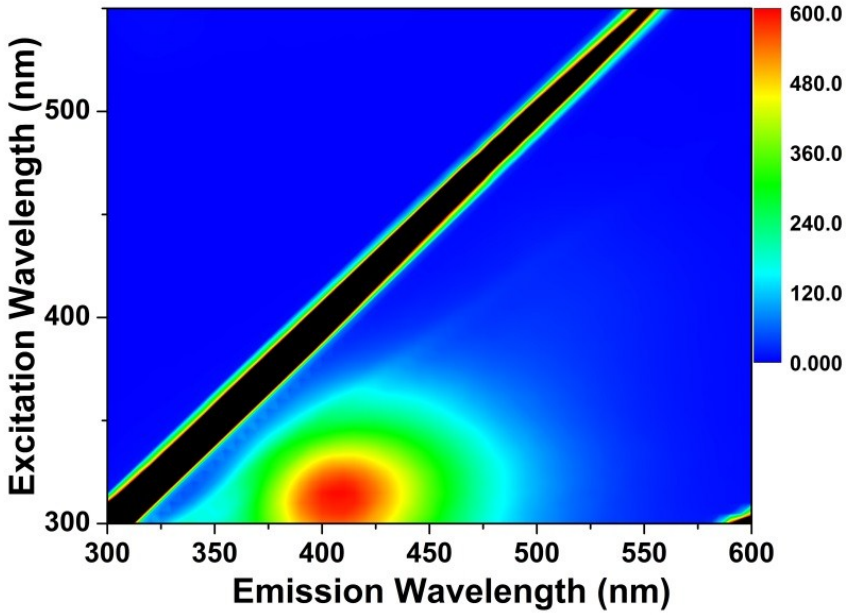

Figure S4. Excitation-emission map of the aqueous solution of g-C_3N_4.

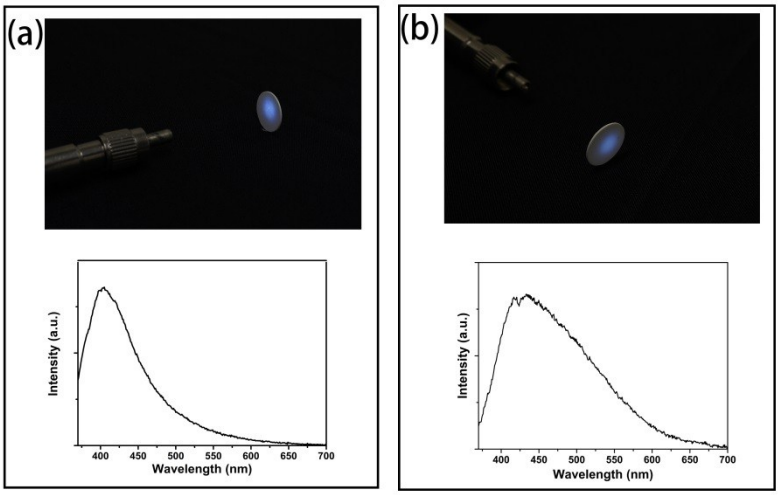

Figure S5. Photograph and emission spectra of the pressed tablets of bare g-C_3N_4 under UV excitation (375 nm), excitation light source and detector are placed on the same side (a) and different side (b).

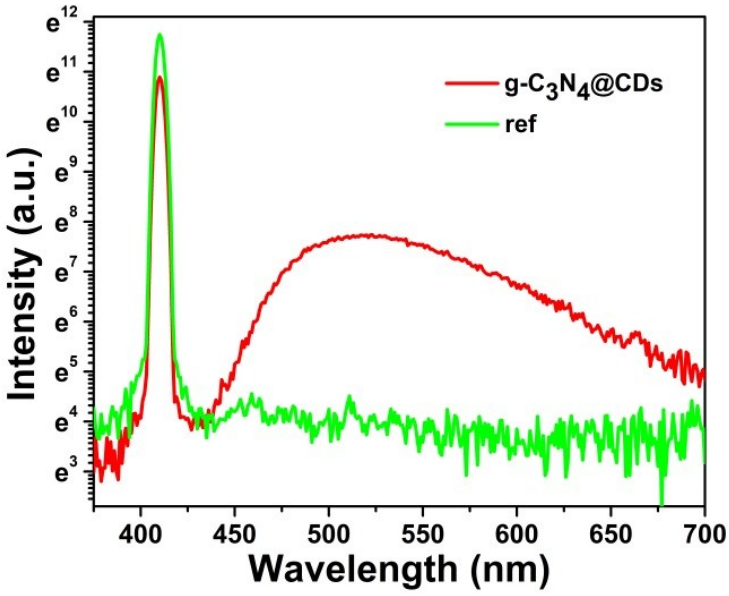

Figure S6. Emission spectra used for the absolute solid-state PL quantum yield determination of CDs@g-C_3N_4 with 1 wt% loading of CDs.

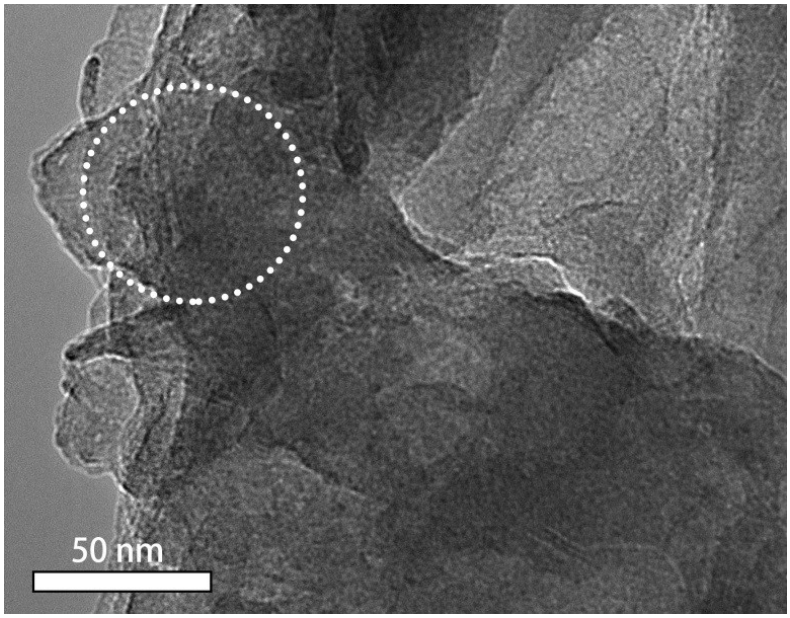

Figure S7. TEM image of CDs/g-C_3N_4.

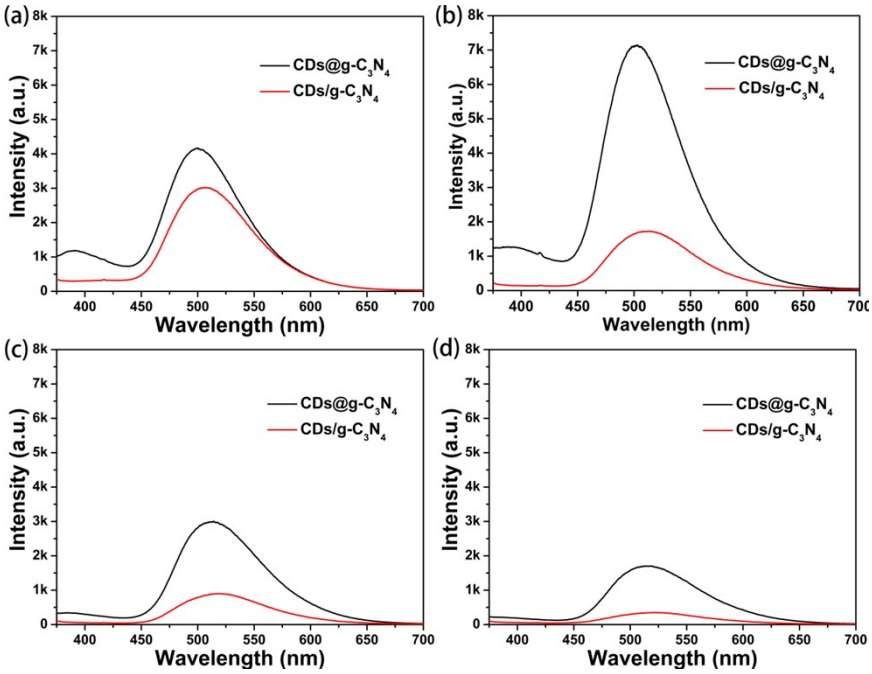

Figure S8. Fluorescence spectra of CDs@g-C_3N_4 (black) and CDs/g-C_3N_4 (red) composites with (a) 0.5 wt%, (b) 1 wt%, (c) 3 wt% and (d) 6 wt% loading of CDs, under 360 nm excitation.

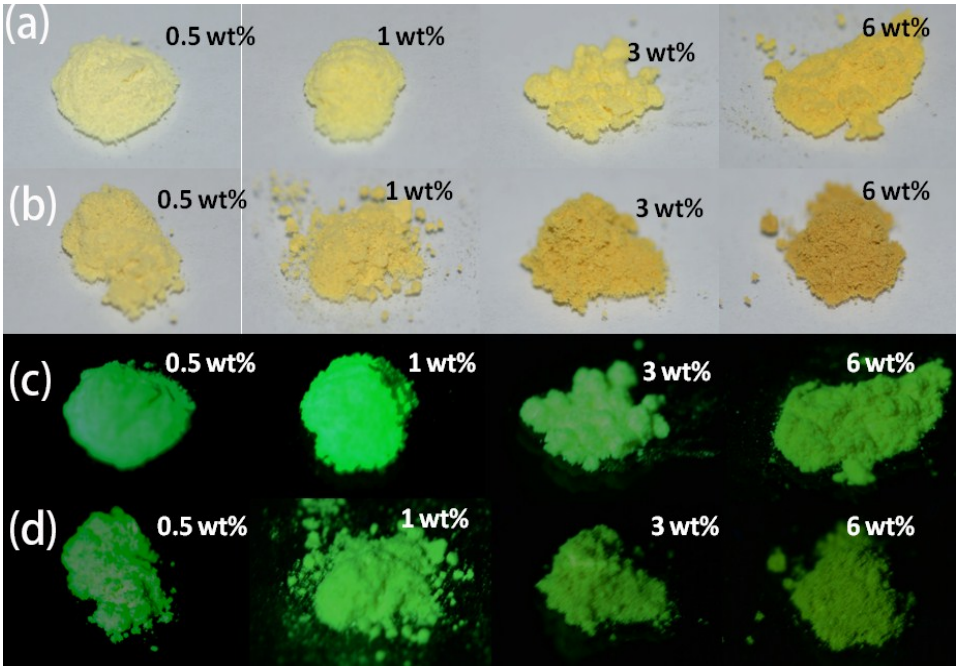

Figure S9. Photographs of CDs@g-C_3N_4 composites with different loading of CDs: (a) CDs@g-C_3N_4 under daylight; (b) CDs/g-C_3N_4 under daylight; (c) CDs@g-C_3N_4 under UV light; (d) CDs/g-C_3N_4 under UV lights.

Table S1. Comparison of the performance characteristics of WLEDs which employed CD-based phosphors in this work and in other reports. PE: power efficiency.

PE (lm/W)	CIE coordinate	Matrix	References
6.9	(0.35, 0.42)	trisodium citrate	ref [1]
21	(0.34, 0.39)	$BaSO_4$	ref [2]
28	(0.33, 0.34)	Silica	ref [3]
8.34	(0.34, 0.31)	sodium silicate	ref [4]
18.8	(0.39, 0.39)	polyvinyl pyrrolidone	ref [5]
8.9	(0.34, 0.34)	PEI	ref [6]
14.8	(0.35, 0.36)	Polystyrene	ref [7]
42	(0.29, 0.33)	g-C_3N_4	**This work**

References:

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[2] D. Zhou, Y. Zhai, S. Qu, D. Li, P. Jing, W. Ji, D. Shen and A. L. Rogach, Electrostatic Assembly Guided Synthesis of Highly Luminescent Carbon-Nanodots@BaSO4 Hybrid Phosphors with Improved Stability, *Small*, 2017, **13**, 1602055.

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[4] Z. Tian, X. Zhang, D. Li, D. Zhou, P. Jing, D. Shen, S. Qu, R. Zboril and A. L. Rogach, Full-Color Inorganic Carbon Dot Phosphors for White-Light-Emitting Diodes, *Adv. Opt. Mater.*, 2017, **5**, 1700416.

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