Supporting Information

Hydrophobic Carbon Dots with Aggregation-Induced Emission for Multistage Anticounterfeiting

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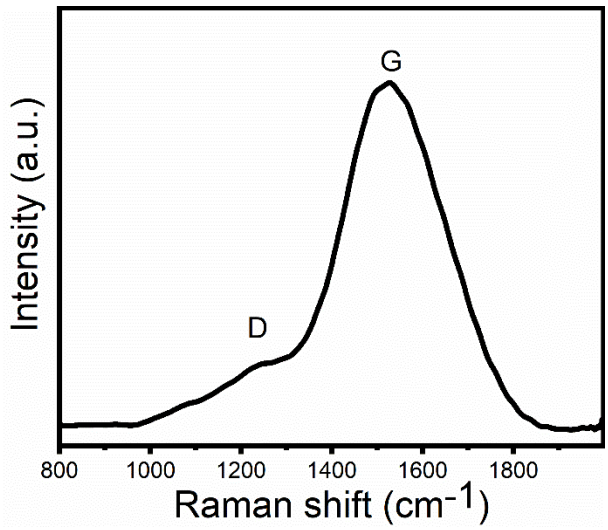

Fig. S1 The Raman spectra of U-CDs.

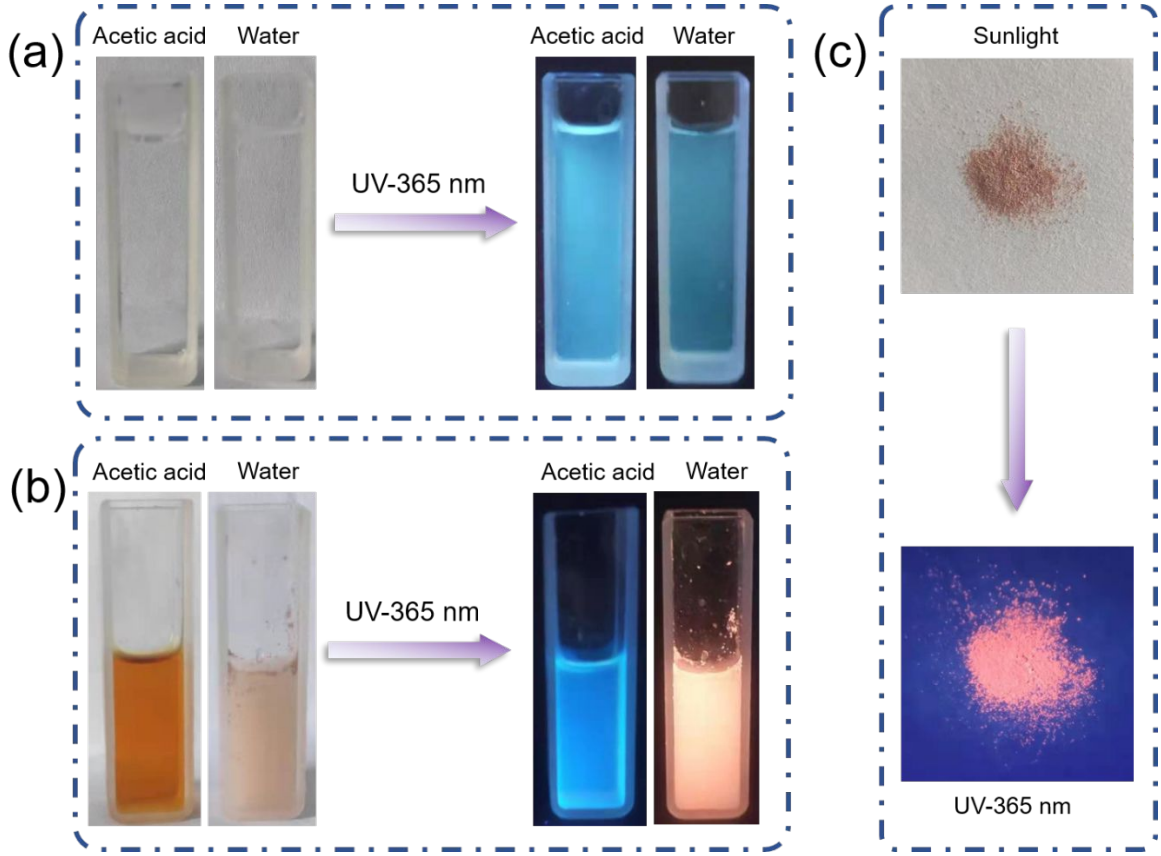

Fig. S2 Fluorescent photos of (a) M-CDs in acetic acid and water, (b) T-CDs in acetic acid and water, and (c) Photos of T-CDs in solid state.

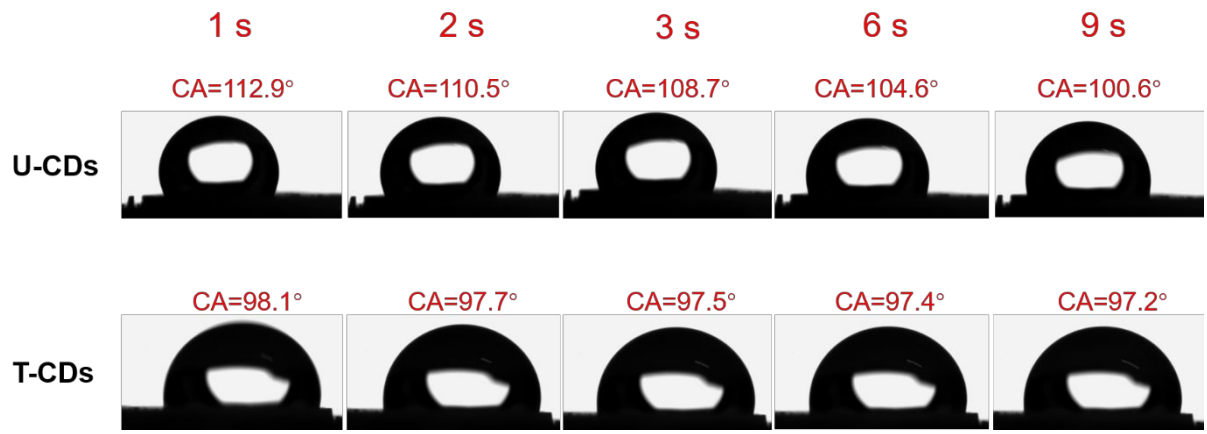

Fig. S3 Contact angle test of two kinds of CDs. Contact angle of (a) U-CDs and (b) T-CDs.

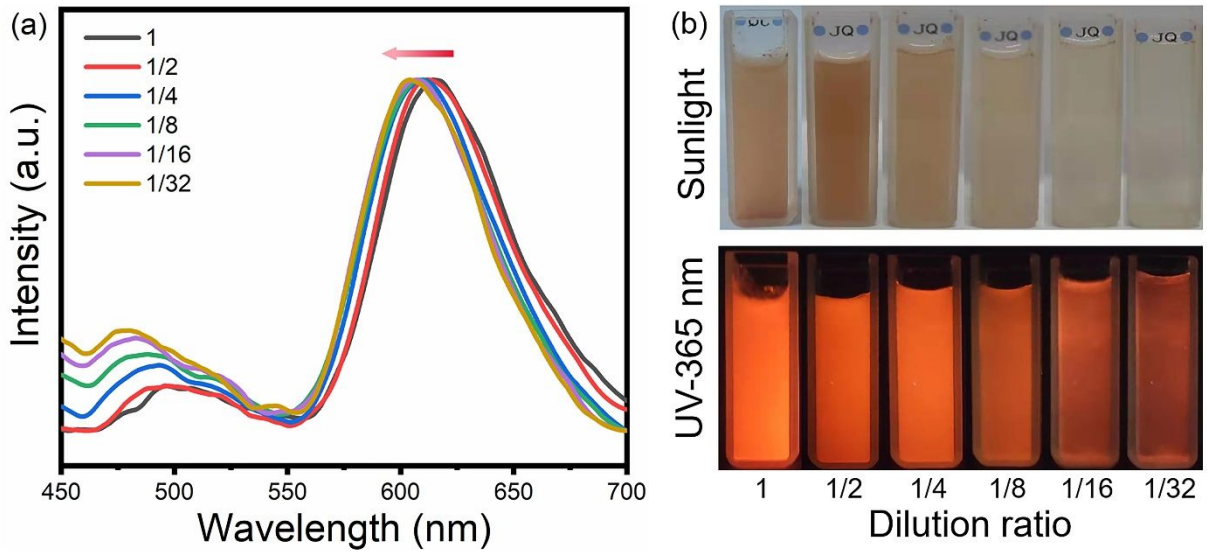

Fig.S4 PL spectra and photos of U-CDs aqueous solutions with different concentrations. (a) Normalized PL spectrum. (b) Sunlight and photographs under UV-365 nm ultraviolet light.

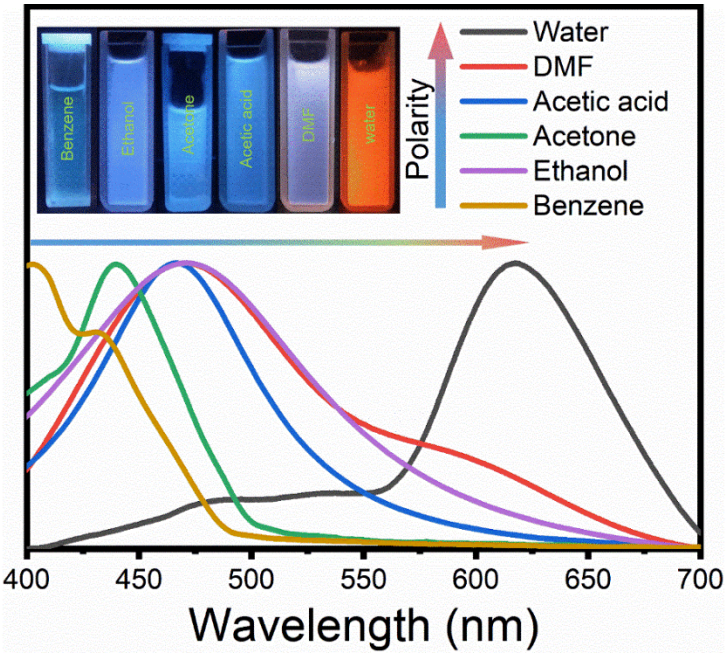

Fig. S5 Fluorescence emission spectra and photos (illustrations) of U-CDs in different polar solvents.

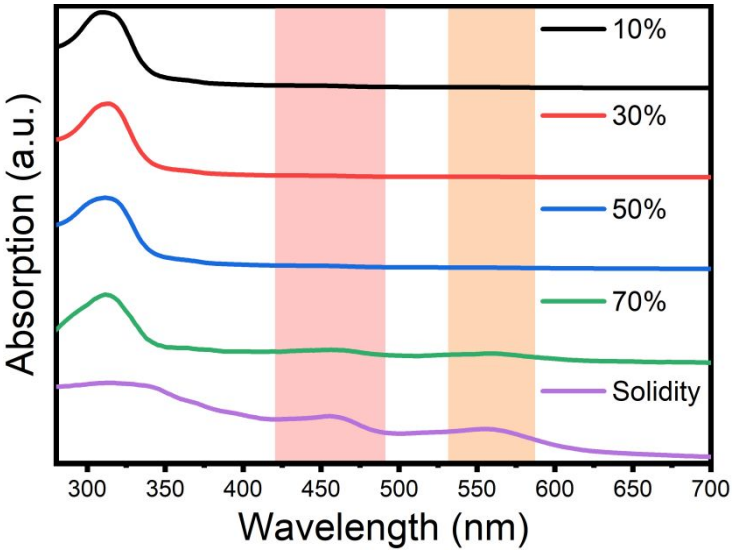

Fig. S6 The UV absorption curves of U-CDs in different proportions of acetic acid and water mixed solvents and in solid state.

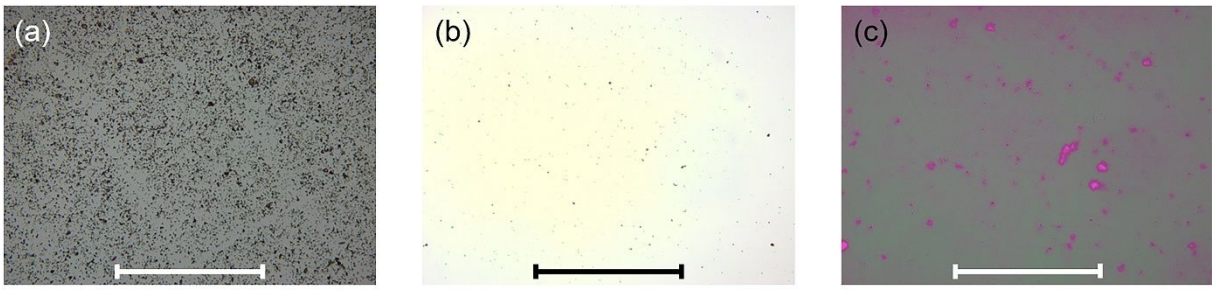

Fig. S7 Fluorescence microscope image of U-CDs. (a) U-CDs in aqueous solution under the dark field. (b) U-CDs in DMF under the dark field. (c) U-CDs in DMF in the open field. Scale bars: 500 μm.

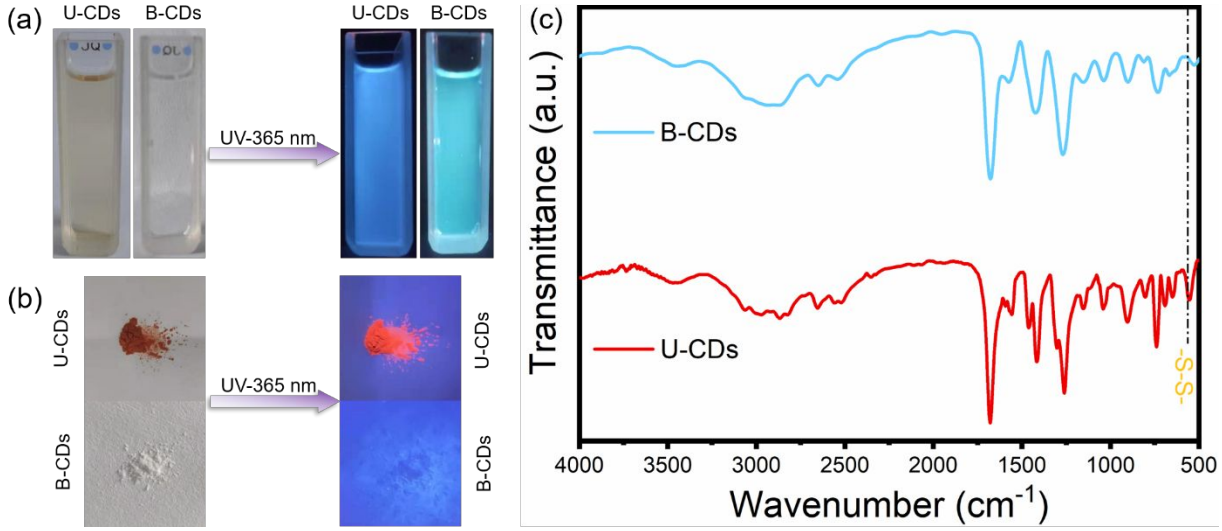

Fig. S8 Comparison of U-CDs and B-CDs. The fluorescent photographs of (a) acetic acid and (b) solid. (c) The FT-IR of U-CDs and B-CDs.

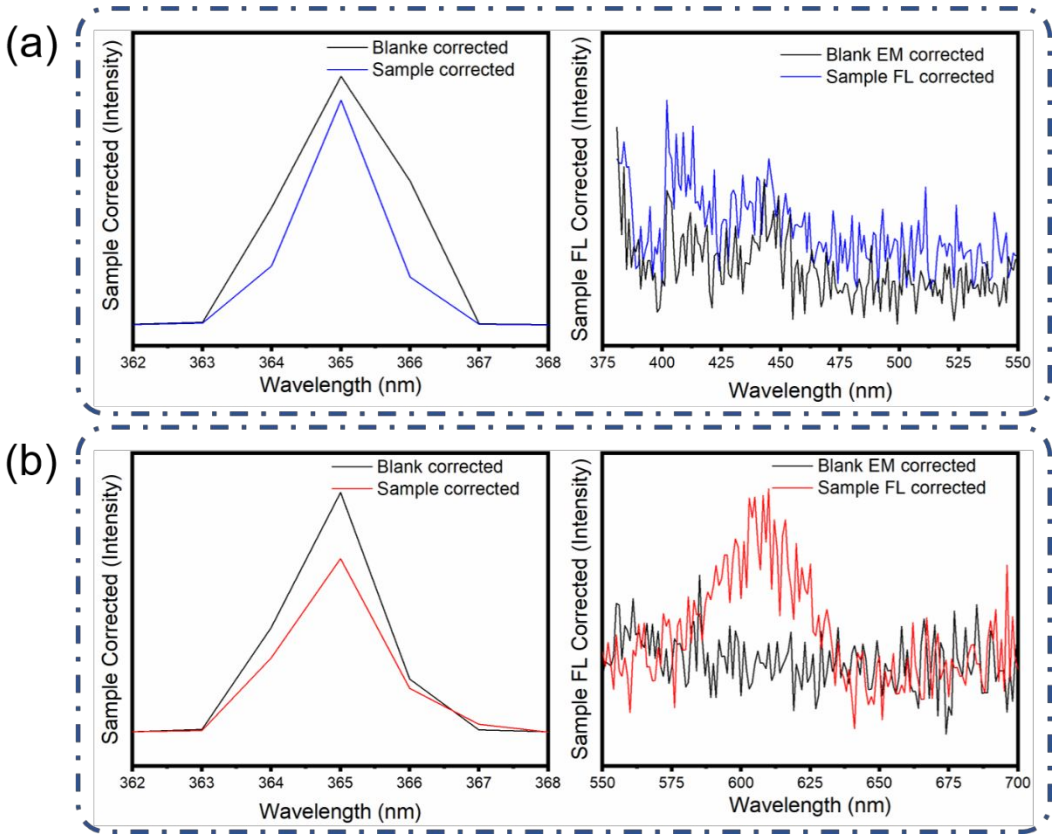

Fig. S9 Photon absorption and fluorescence emission curves in two states. (a) Liquid and (b) solid.

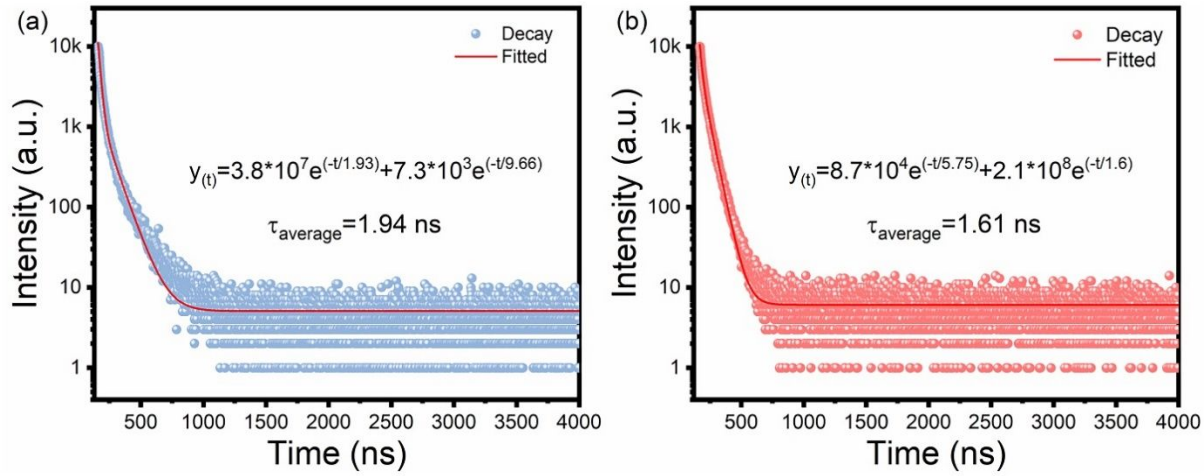

Fig. S10 Fluorescence lifetime fitting curve of U-CDs. (a) The fluorescence lifetime of U-CDs in acetic acid solution. (b) The fluorescence lifetime of U-CDs powder.

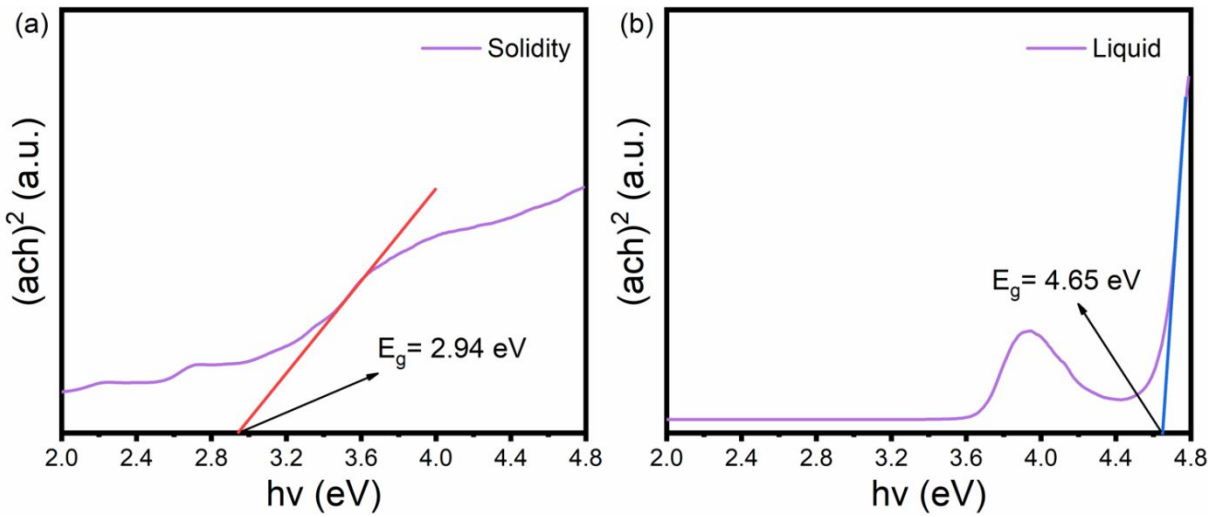

Fig. S11 The UV diffuse reflectance curves of U-CDs in two states. (a) Solid and (b) liquid.

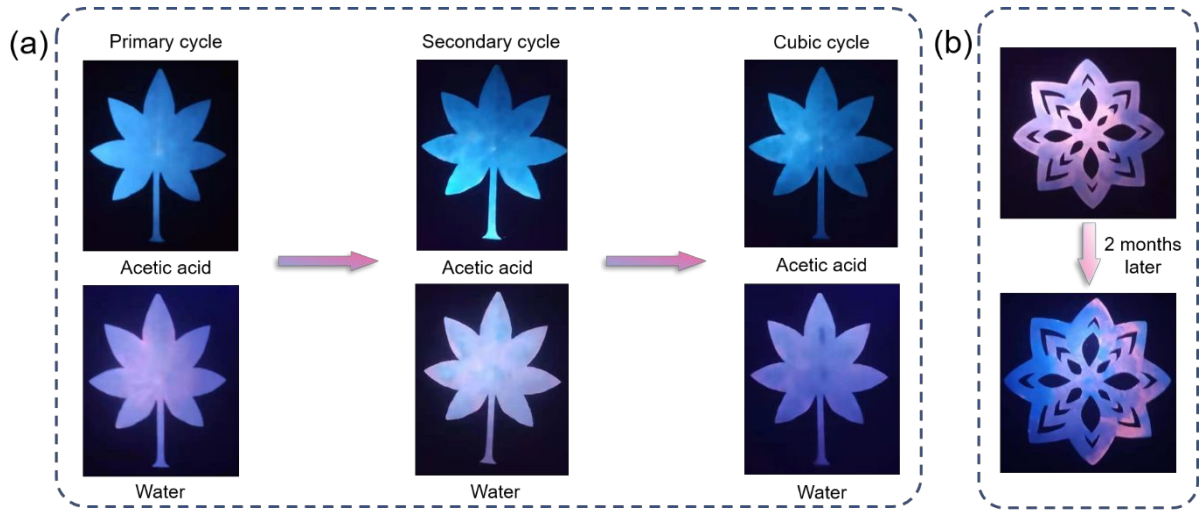

Fig. S12 The test of anti-counterfeiting logo on (a) cycle and (b) retention time.

Table S1 Comparison of our work and work related to AIE anticounterfeiting.

	Material	Temperature and Time	FL Color	PLQY
H·Y Yang et al.[1]	2, 2-dithiobenzoic acid + Melamine	180℃, 10 h	Liquid: Blue Solidity: Red	Solidity: 5.96%
X·Y Kou et al.[2]	2, 2-dithiobenzoic acid + *o*-phenylenediamine	180℃, 10 h	Liquid: Blue Solidity: Aurantium	--
Z. Wan et al.[3]	Trimellitic acid + Piperazine	700 W, 5 min	Liquid: Yellow Solidity: Yellow	Liquid: 6.14% Solidity: 58.35%
F Arshad et al.[4]	para-Benzoquinone + *L*-cysteine	600 W, 10 min	Liquid: Yellow Solidity: Blue	36%
L·J Yang et al.[5]	2, 2-dithiobenzoic acid + *o*-phenylenediamine (*m*-phenylenediamine, *p*-phenylenediamine)	180℃, 10 h	Liquid: Blue Solidity: Red, Yellow, Blue	Red: 4.05% Yellow: 20.77% Blue: 1.76%
L Ding et al.[6]	2, 2-dithiobenzoic acid + Cyanuric acid + ethylenediamine	180℃, 10 h	Liquid: Blue Solidity: Red Phosphorescence: Green	Solidity: 9.14
This Work	2, 2-dithiobenzoic acid + Urea	200℃, 12 h	Liquid: Blue Solidity: Red	Liquid: 7.4% Solidity: 19.6%

Reference

[1] H. Yang, Y. Liu, Z. Guo, B. Lei, J. Zhuang, X. Zhang, Z. Liu, C. Hu, Hydrophobic carbon dots with blue dispersed emission and red aggregation-induced emission, Nat Commun, 10 (2019) 1789.

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