# Supporting Information

# ESIPT Fluorophores Derived from 2,3-Dichloro-5,6-dicyano-*p*-benzoquinone Based Carbon Dots for Dual Emission and Multiple Anti-Counterfeiting

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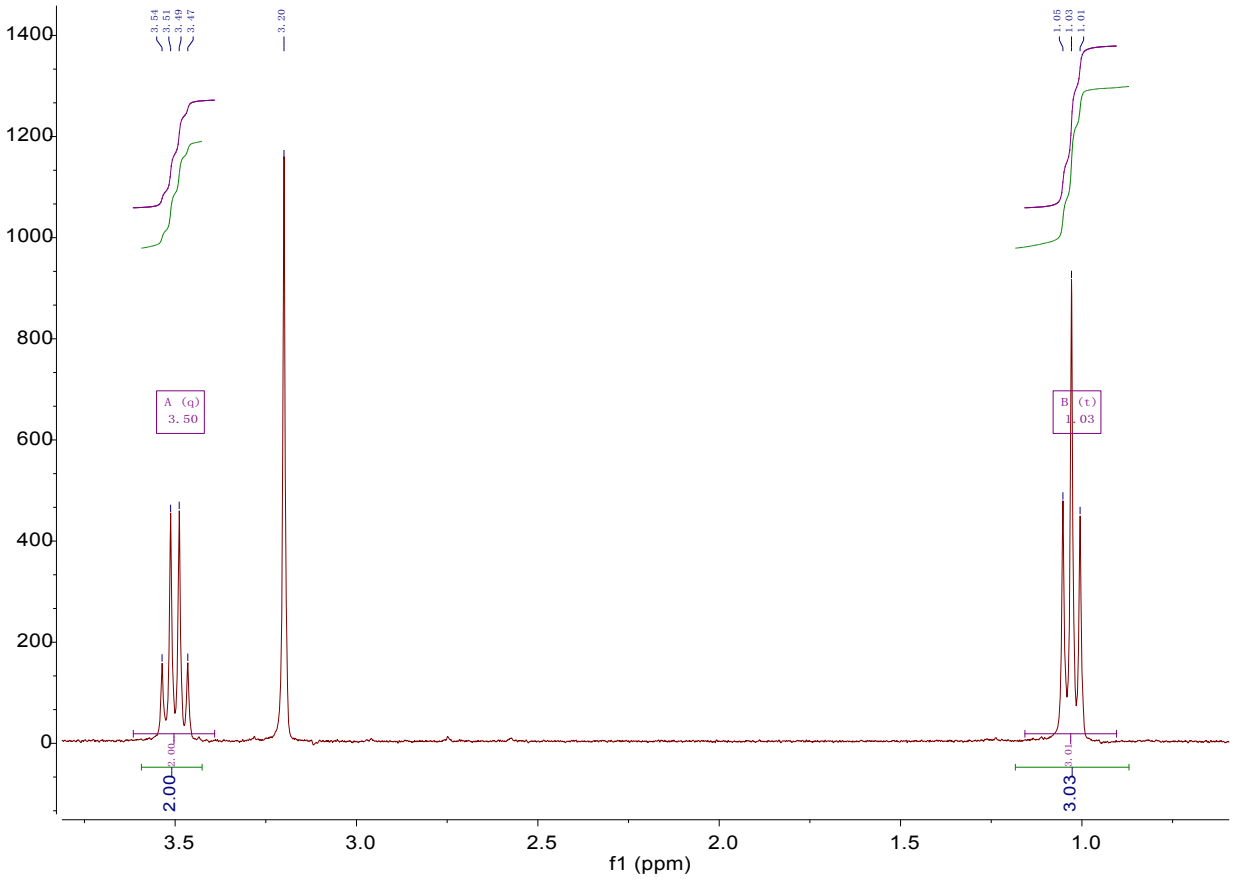



**Figure S1** $^{1}$H NMR of CEDD with high resolution showing the detail in the region of 0.4-3.8 ppm. The solvent is MEOD-$d_4$.

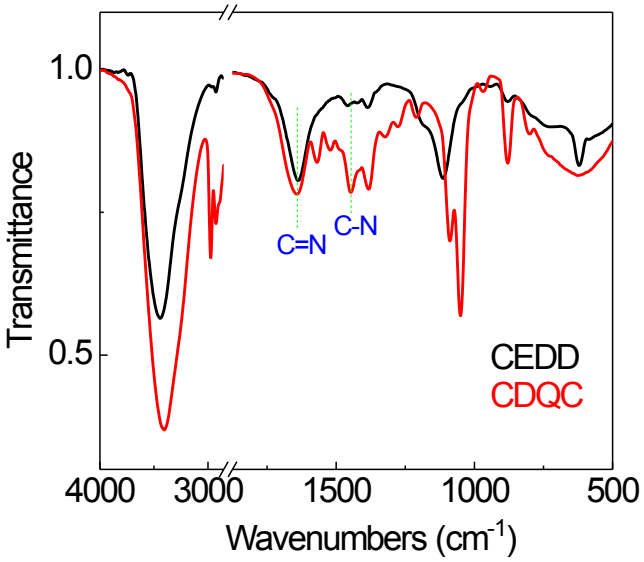



**Figure S2** FTIR spectra of CEDD (black) and CDQC (red).

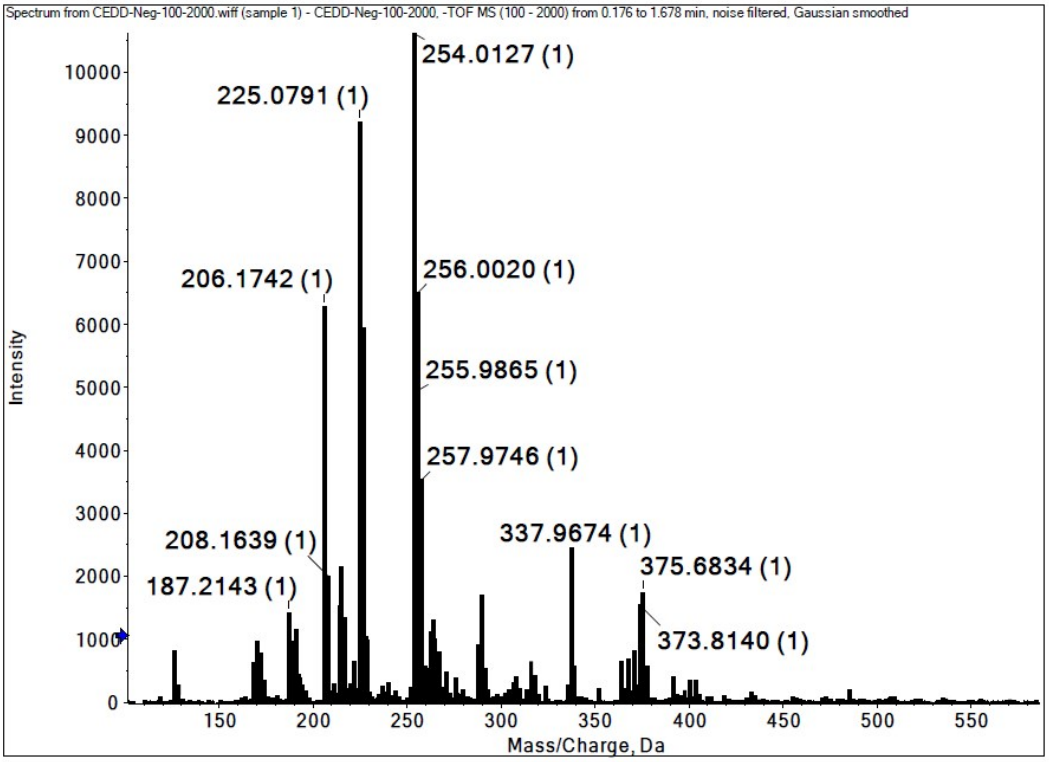
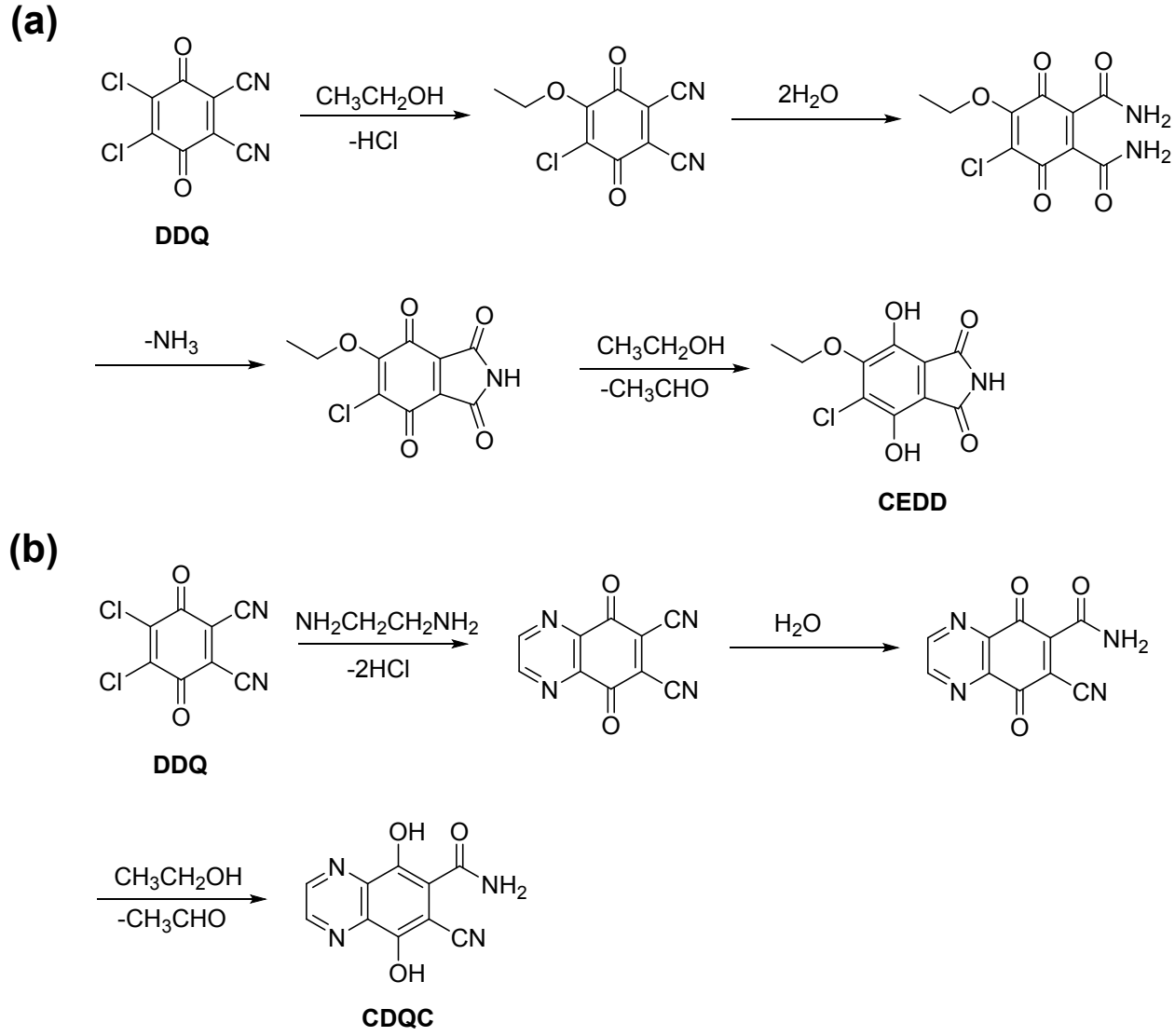



**Figure S3** High resolution mass spectrum of CEDD showing the mass of each species. Negative ion mode was used.




**Scheme S1** Possible mechanism of the formation of CEDD (a) and CDQC (b).

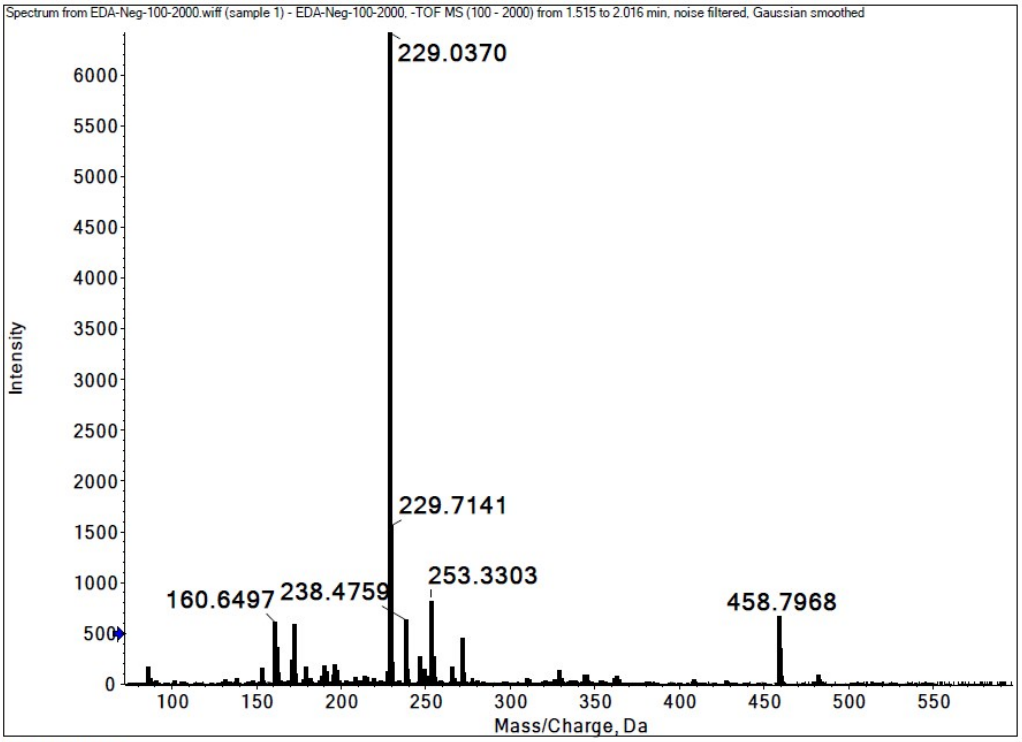



**Figure S4** High resolution mass spectrum of CDQC showing the mass of each species. Negative ion mode was used.

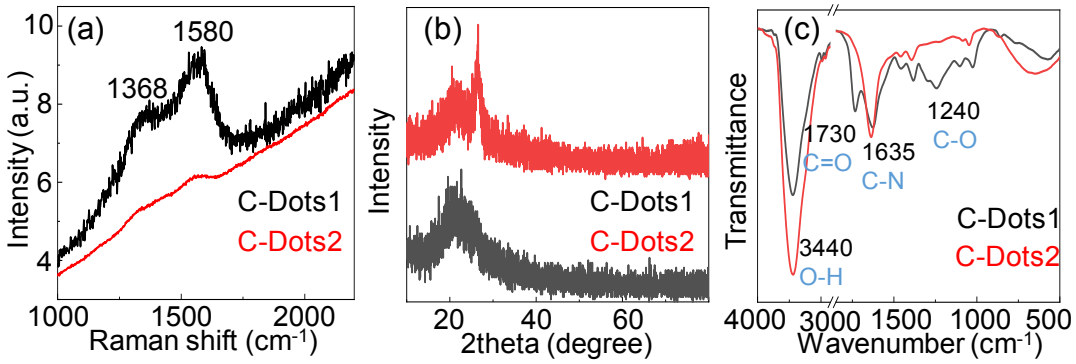



**Figure S5** Raman spectra (a), XRD pattern (b) and FT-IR spectra (c) of C-Dots1 (black) and C-Dots2 (red).

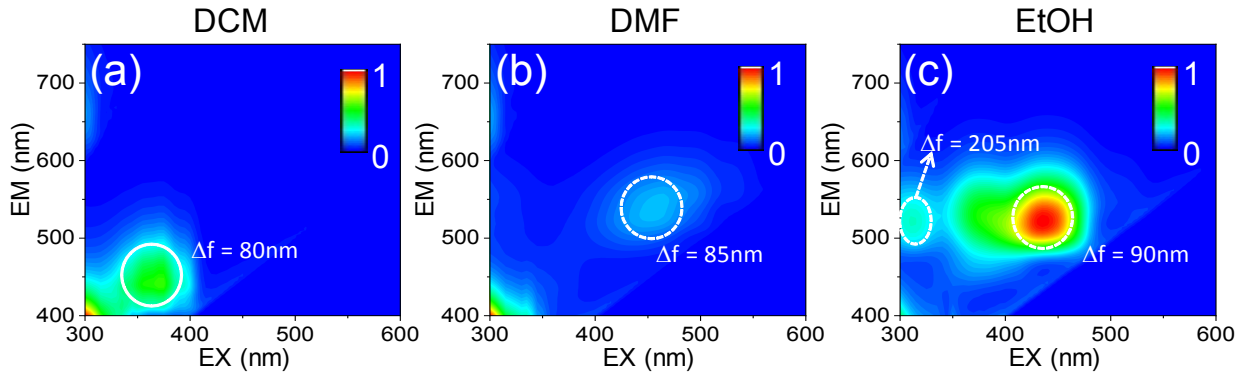



**Figure S6** 2D-PLE contour maps of CEDD in DCM (a), DMF (b) and EtOH (c). White solid and dash circles indicate the blue and green emission centers of CEDD solution, respectively. The Stokes shifts (Δf) for each center are given in the figures.

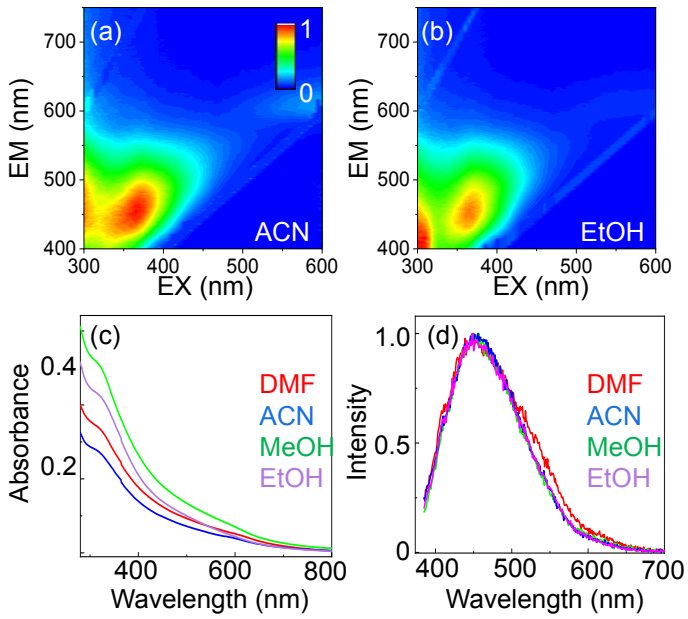



**Figure S7** (a, b) 2D-PLE contour maps of C-dots1 in ACN (a) and EtOH (b). (c) Absorption spectra of C-dots1 solution in various solvents. (d) Selected PL emission spectra of C-dots1 solution in various solvents. The excitation wavelength is 365 nm.

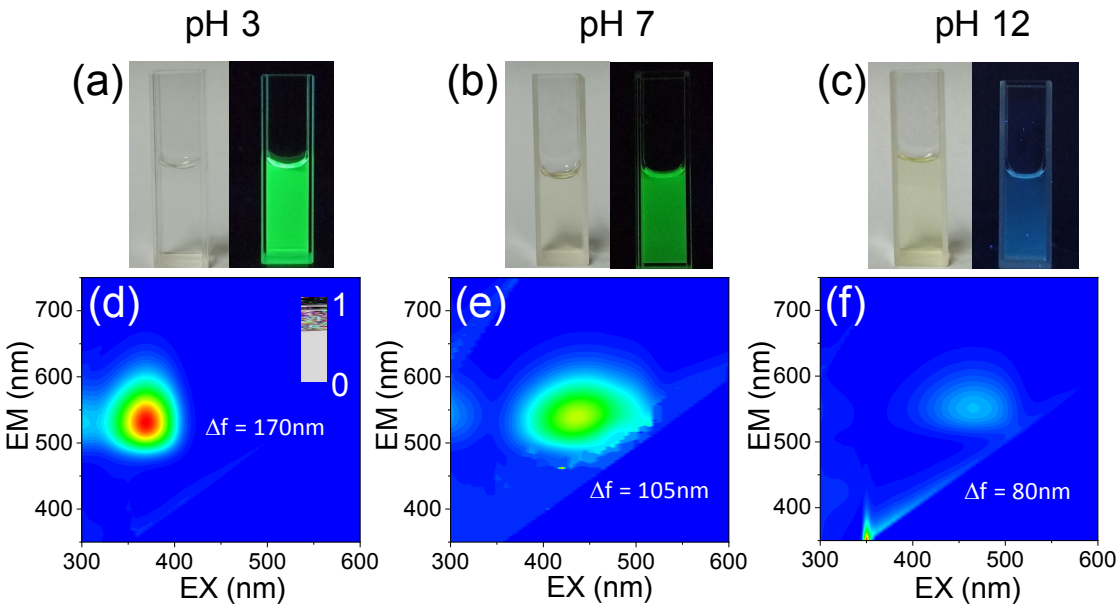



**Figure S8** (a-c) The daylight (left) and fluorescence (right) photographs of aqueous solution of CEDD. (d-f) 2D PLE contour maps of CEDD solution under acidic (d, pH 3), neutral (e, pH 7) and alkali (f, pH 12) conditions.

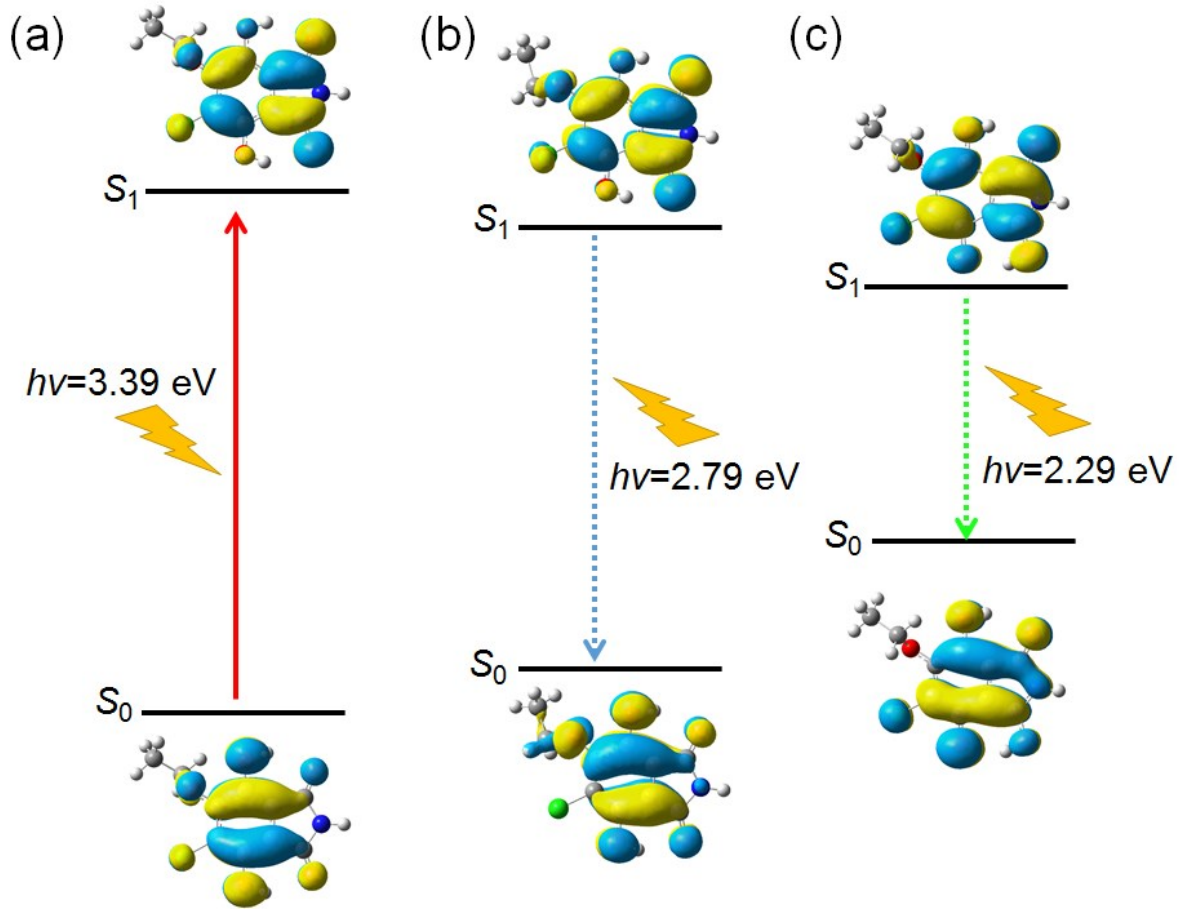



**Figure S9** The wave functions of frontier orbitals and energy level diagrams of CEDD molecule. (a) Enol form $S_0 \rightarrow S_1$; (b) Enol form $S_0 \leftarrow S_1$; (c) Keto form $S_0 \leftarrow S_1$.

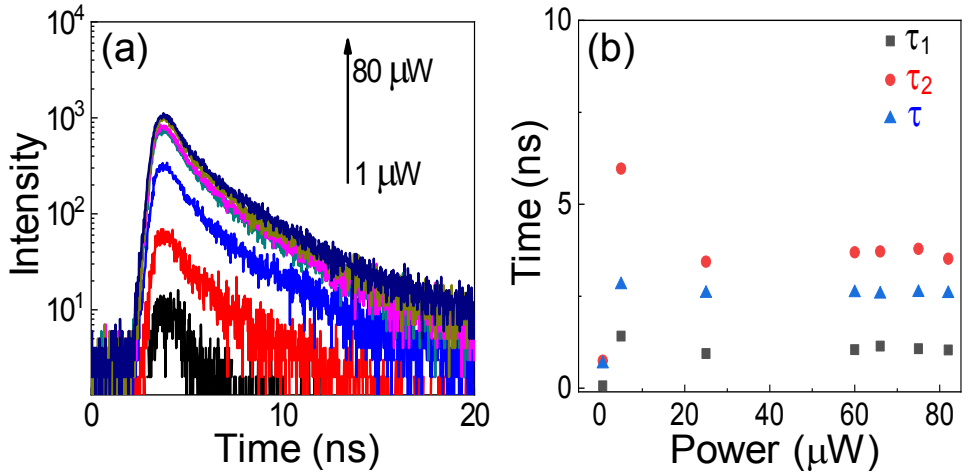



**Figure S10** (a) The PL decay curves of CDQC solid powers under different excitation powers. (b) The fitted $\tau_1$, $\tau_2$ and $\tau$ as functions of laser powers.

**Table S1**. Extracted values of fluorescence lifetime and weight of fitting for 7×5 matrix.

| Row | Col | $\tau_1$ (ns) | $A_1$ (%) | $\chi^2$ |
|---|---|---|---|---|
| 1 | 1 | 11.82 | 100 | 1.178 |
| 1 | 2 | 11.74 | 100 | 1.188 |
| 1 | 3 | 11.75 | 100 | 1.155 |
| 1 | 4 | 11.41 | 100 | 1.186 |
| 1 | 5 | 11.46 | 100 | 1.181 |
| 2 | 1 | 6.47 | 100 | 0.951 |
| 2 | 2 | 6.58 | 100 | 0.904 |
| 2 | 3 | 6.61 | 100 | 0.964 |
| 2 | 4 | 6.88 | 100 | 0.956 |
| 2 | 5 | 11.25 | 100 | 1.173 |
| 3 | 1 | 6.97 | 100 | 0.982 |
| 3 | 2 | 7.18 | 100 | 0.958 |
| 3 | 3 | 7.19 | 100 | 0.993 |
| 3 | 4 | 6.88 | 100 | 1.024 |
| 3 | 5 | 11.58 | 100 | 1.105 |
| 4 | 1 | 11.61 | 100 | 1.134 |
| 4 | 2 | 11.84 | 100 | 1.112 |
| 4 | 3 | 11.61 | 100 | 1.270 |
| 4 | 4 | 12.53 | 100 | 1.156 |
| 4 | 5 | 12.40 | 100 | 1.061 |
| 5 | 1 | 12.10 | 100 | 1.192 |
| 5 | 2 | 7.02 | 100 | 0.976 |
| 5 | 3 | 6.91 | 100 | 0.956 |
| 5 | 4 | 6.85 | 100 | 1.058 |

| | | | | |
|---|---|---|---|---|
| 5 | 5 | 7.40 | 100 | 0.963 |
| 6 | 1 | 12.25 | 100 | 1.094 |
| 6 | 2 | 7.25 | 100 | 0.950 |
| 6 | 3 | 7.20 | 100 | 0.953 |
| 6 | 4 | 7.11 | 100 | 0.991 |
| 6 | 5 | 7.19 | 100 | 0.990 |
| 7 | 1 | 12.37 | 100 | 1.170 |
| 7 | 2 | 12.52 | 100 | 1.161 |
| 7 | 3 | 12.22 | 100 | 1.178 |
| 7 | 4 | 12.44 | 100 | 1.150 |
| 7 | 5 | 12.42 | 100 | 1.116 |