**Supporting Information:**

| Item | Atom [at%] | C-C / C=C [%] | C-O / C-N [%] | C=O [%] | -COOH [%] |
|---|---|---|---|---|---|
| Before | C1s(55.10) | 38.94 | 31.59 | 24.33 | 5.14 |
| After | C1s(55.29) | 42.7 | 24.12 | 19.09 | 14.07 |
| Before | O1s(26.19) | | 19.54 [a)] | 35.12 | 45.34 |
| After | O1s (31.69) | | 17.77 [a)] | 27.7 | 54.51 |

Table S1: The major contents of chemical bonds on CNDs, obtained from XPS measurement. Because of the similar binding energies for C-C and C=C and for C-O and C-N, they cannot be clearly identified in the XPS spectra.

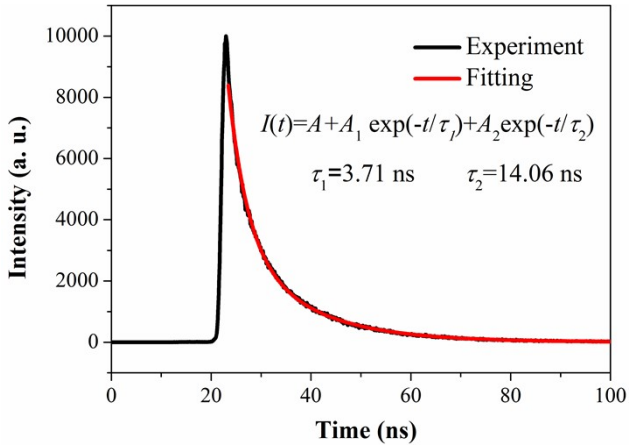


Fig. S1: Time resolution of the PL emission from A-CNDs. The black curve is the experimental result, measured at a fixed emission wavelength of 450 nm with a fixed excitation wavelength of 340 nm. The red curve is obtained from the double exponential fitting, which gives decay time of $\tau_1$=3.71 ns and $\tau_2$=14.06 ns.

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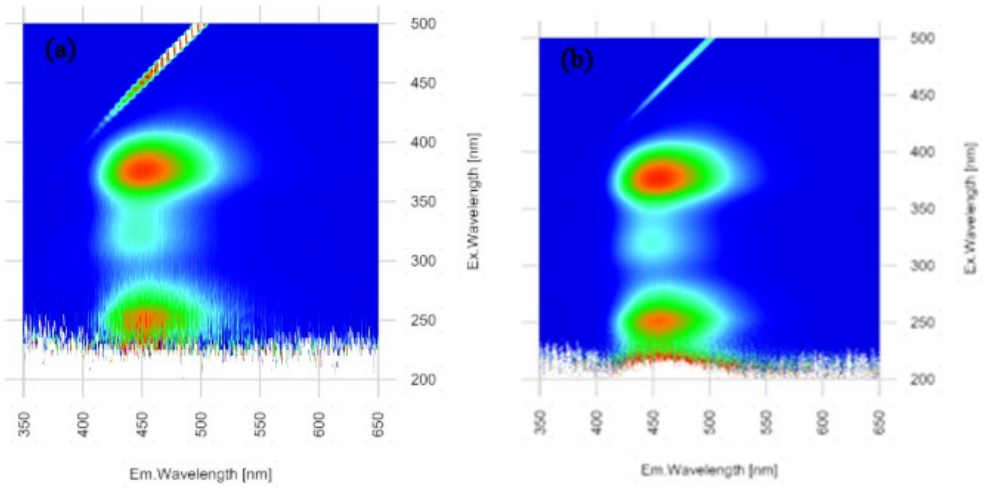


Fig. S2. The PL spectra of CNDAS with relatively lower, in (a), and higher, in (b), CND concentrations. The absolute concentrations for these two CNDs are not determined quantitatively.

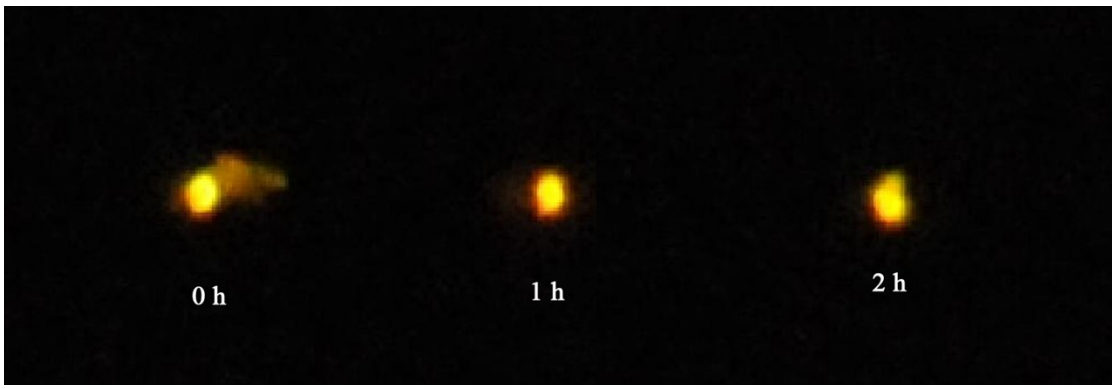


Fig. S3. To examine the stability and reversibility of the SL effect from CNDAS, we conduct the following measurement. The SL experiment is undertaken for 2 seconds in every 1 min, in order to dissipate the heat of the focused ultrasound apparatus. This process is repeated for more than 2 hours. This figure shows the SL images in CNDAS at the beginning of the measurement (left), after 1 hour (middle) and after 2 hours (right).