

Enhancement in Luminescence of Lanthanide Metal Complex on addition of Fluorescent Carbon dots

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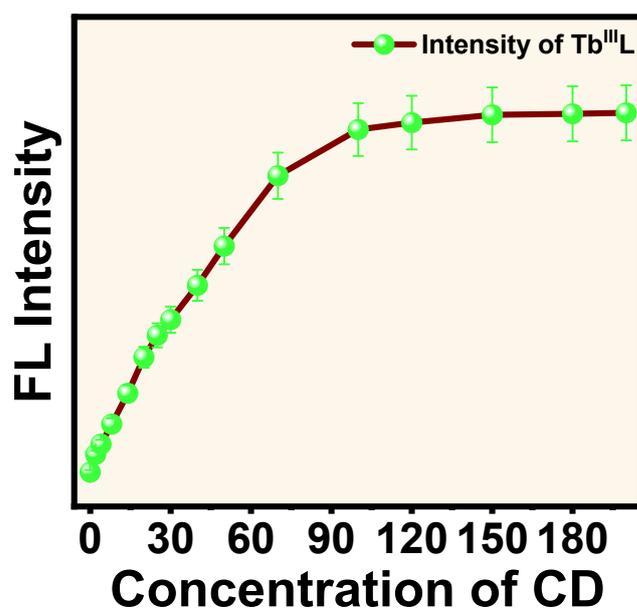


Figure S1. Fluorescence emission spectra of Tb^{III}L with varying CDs concentration (2–200 µg/mL).

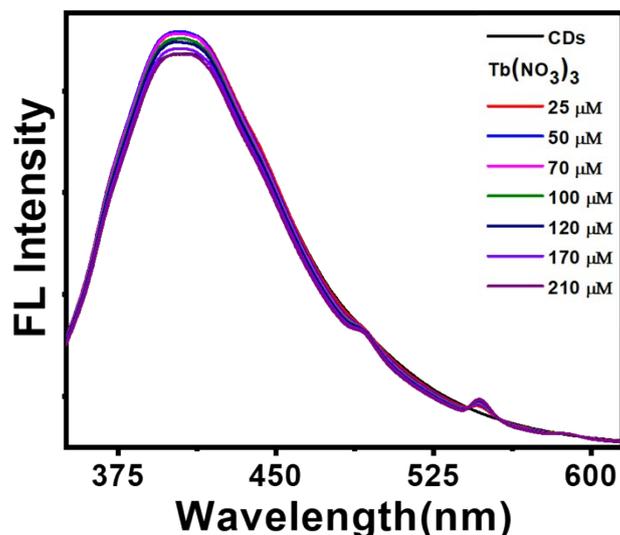


Figure S2. Fluorescence emission spectra of $\text{Tb}(\text{NO}_3)_3 \cdot 6\text{H}_2\text{O}$ with varying concentration from 25-210 $\mu\text{g}/\text{mL}$ of CDs.

Photoluminescence (PL) measurements were performed using ligand (H_2L) against CDs, an enhancement trend in emission was observed. Concentration of 100 $\mu\text{g}/\text{mL}$ of CDs, with a maximum enhancement of approximately 2.2-fold have been noted. Upon further increasing the CDs concentration beyond 100 $\mu\text{g}/\text{mL}$ (up to 200 $\mu\text{g}/\text{mL}$), a decrease in fluorescence intensity accompanied by non-consistent data points was observed. This behaviour can be rationalized by the onset of self-quenching and aggregation effects at higher CDs this possibly confirms enhancement is arising due to antenna-assisted lanthanide(III) complexes rather than ligand-centered fluorescence.

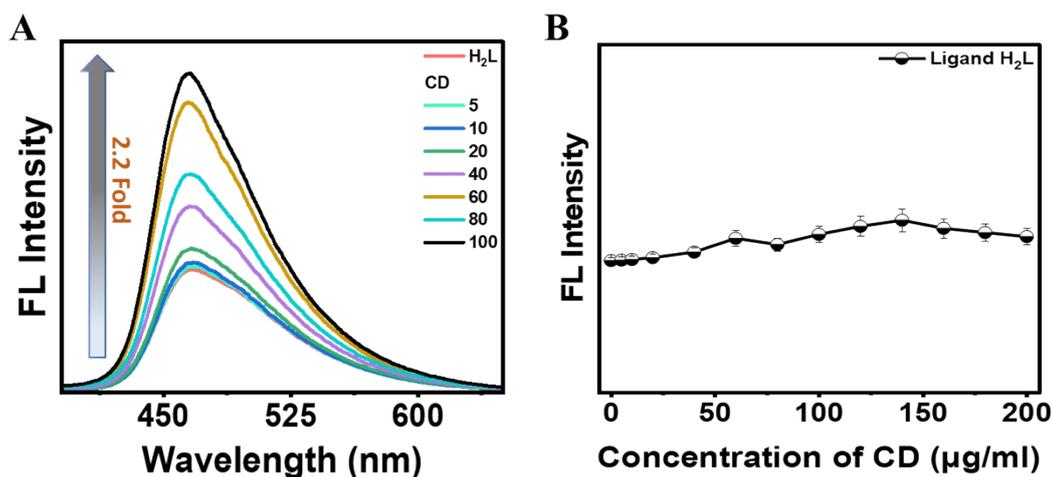


Figure S3. Fluorescence emission spectra of Ligand (2 mM) with varying CDs (1mg/mL) concentration. (A) 5-100 $\mu\text{g}/\text{mL}$, (B) 5-200 $\mu\text{g}/\text{mL}$.

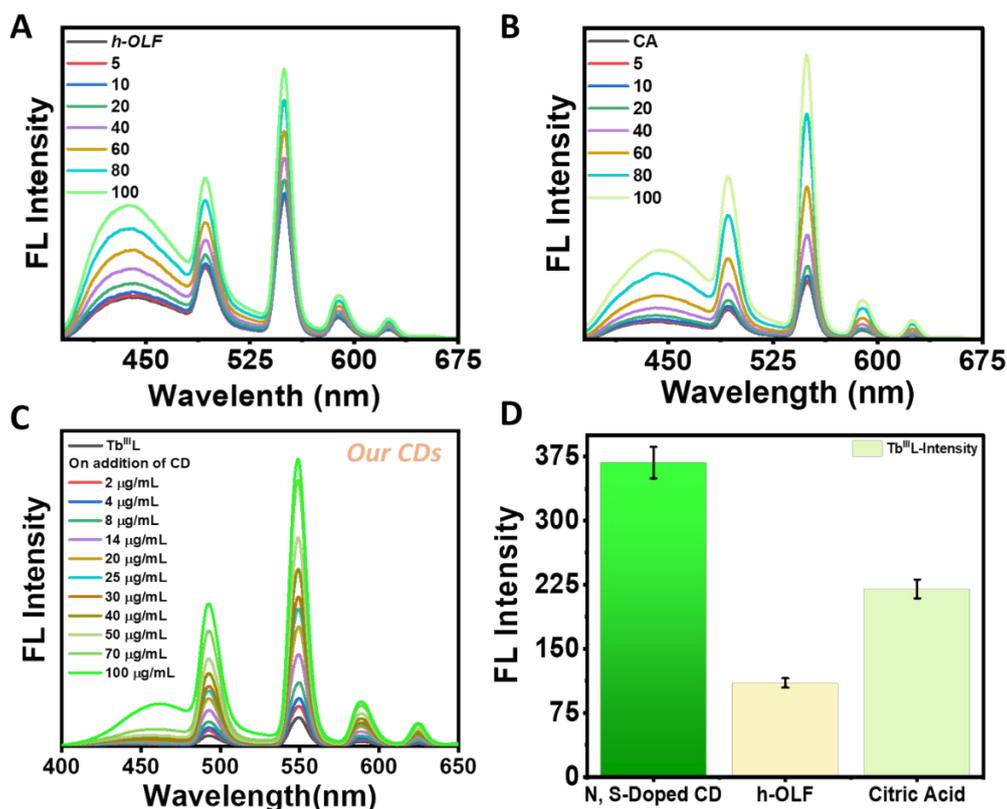


Figure S4. Fluorescence emission spectra of $\text{Tb}^{\text{III}}\text{L}$ with varying CDs concentration (5–100 $\mu\text{g/mL}$). (A) Hollow Onion like Fullerene (h -OLF); (B) Citric Acid (CA) Carbon Dots; (C) N, S-Doped Carbon Dots. (D) Bar graph showing emission enhancement comparisons of different nanomaterial.

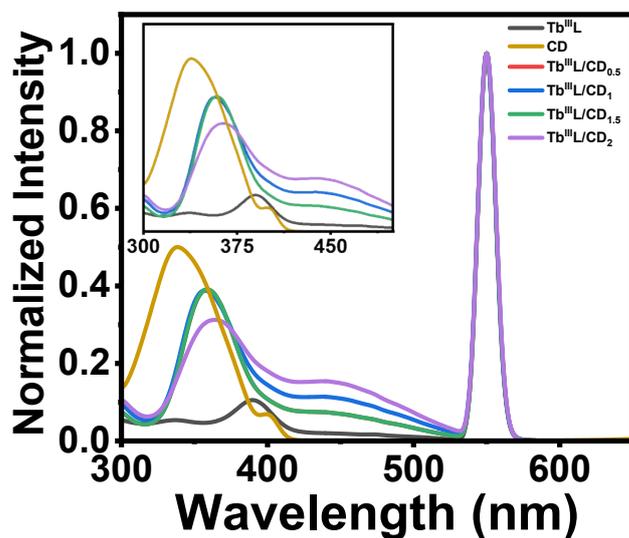


Figure S5. Fluorescence excitation spectra of $\text{Tb}^{\text{III}}\text{L}$ with varying CDs concentration (0.5-2 μL) from 1 mg/mL solution.
