Supporting Materials

Investigating Photoactive Carbon Nanotube-Perylene-Quantum Dot Hybrid Nanocomposites

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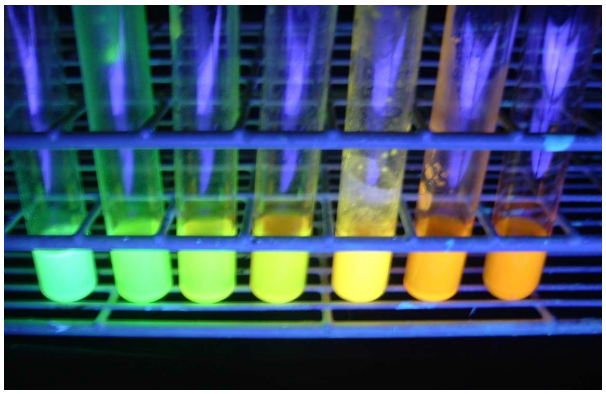

Figure S1. An optical image of synthesized CdSe quantum dots under long-wave (365nm) UV light.

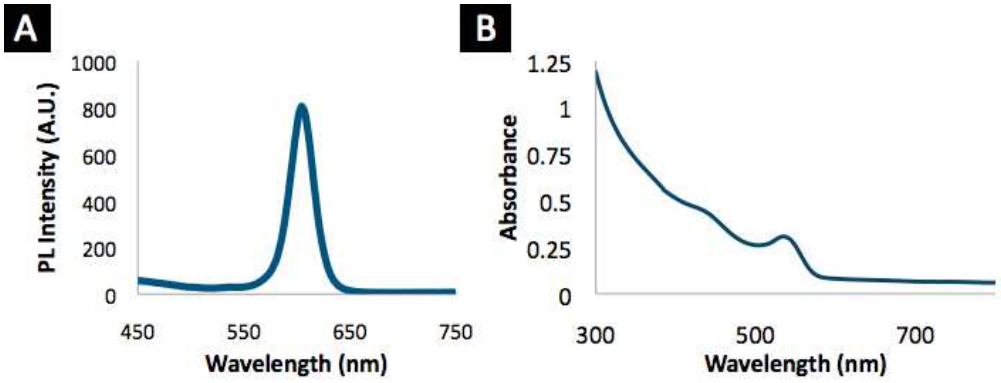

Figure S2. (A) Photoluminescence of synthesized CdSe QDs[1] (λ_{ex}: 400 nm, Slit Width: 5.0 nm, Scan Speed: 500 nm/min) (B) UV-Vis absorbance spectrum of synthesized CdSe quantum dots. The average quantum yield for the CdSe QDs was found to be ~10% (Standard: Rhodamine 6G, quantum yield: 94%)[2]

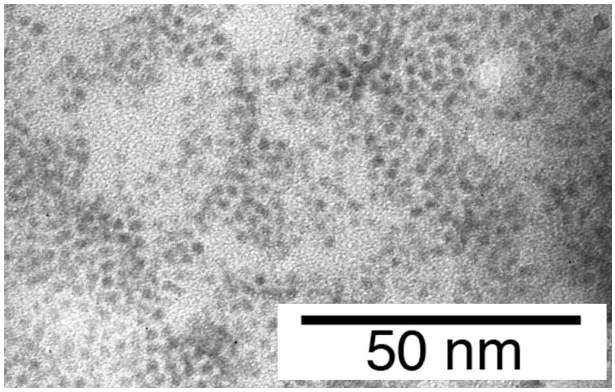

Figure S3. A transmission electron micrograph (TEM) of synthesized CdSe Quantum Dots[1]. The darker appearing quantum dots are due to the overlap of quantum dots increasing the electron density at the TEM detector. The average diameter of QDs was 2.55 nm +/- 0.15nm.

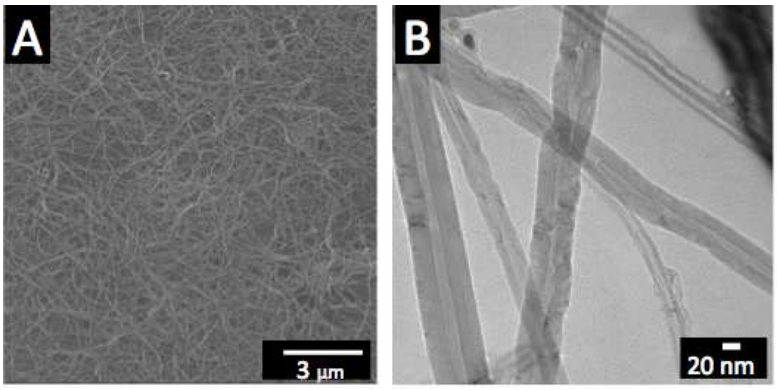

Figure S4. (A) Scanning electron micrograph (SEM) and (B) Transmission electron micrograph (TEM) of CVD synthesized multi-wall carbon nanotubes[3]. The average diameter of the CNTs was 52nm +/- 13nm.

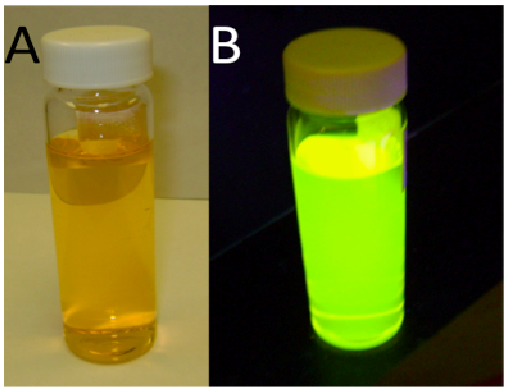

Figure S5. An optical image of ETPTCDI in (A) ambient light and (B) under 365nm light.

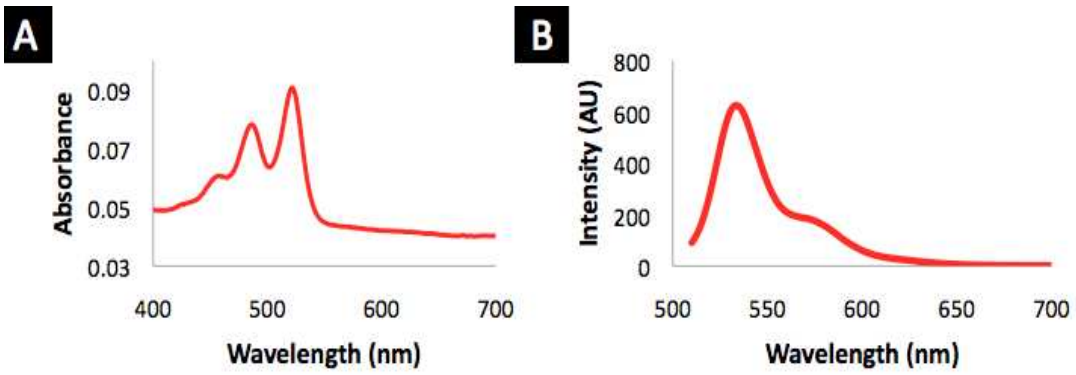

Figure S6. (A) UV-Vis absorbance and (B) PL spectra for synthesized ETPTCDI[4] (λ_{ex}: 490 nm, Slit Width: 5.0 nm, Scan Speed: 500 nm/min).

References

1. Qu, L.; Peng, A.; Peng. X.; Alternative Routes toward High Quality CdSe Nanocrystals. *Nano Lett*. **2001**, 1,6, 333-337.

2. Lakowicz, J. R. Principles of Fluorescence Spectroscopy. Springer, **2006**, NY, page 54.\

3. Li, X.; Zhang, X.; Ci, L.; Shah, R.; Wolfe, C.; Kar, S.; Talapatra, S.; Ajayan, P.M. Air assisted growth of long aligned carbon nanotube films, *Nanotechnology.* **2008,** 19, 455609.

4. Xu, B.; Xiao, X.; Yang, X.; Zang, L.; Tao, N. Large Gate Modulation in the Current of a Room Temperature Single Molecule Transistor. *J. Am. Chem. Soc.* **2005,** 127, 8, 2386–2387.