Electronic Supplementary Information

Polyphenylenepyridyl Dendrimers as Stabilizing and Controlling Agents for CdS Nanoparticle Formation

Nina V. Kuchkina , David Gene Morgan, Barry D. Stein, Lada N. Puntus, Alexander M. Sergeev, Alexander S. Peregudov, Lyudmila M. Bronstein, Zinaida B. Shifrina

Influence of the reaction conditions on the CdS NP formation

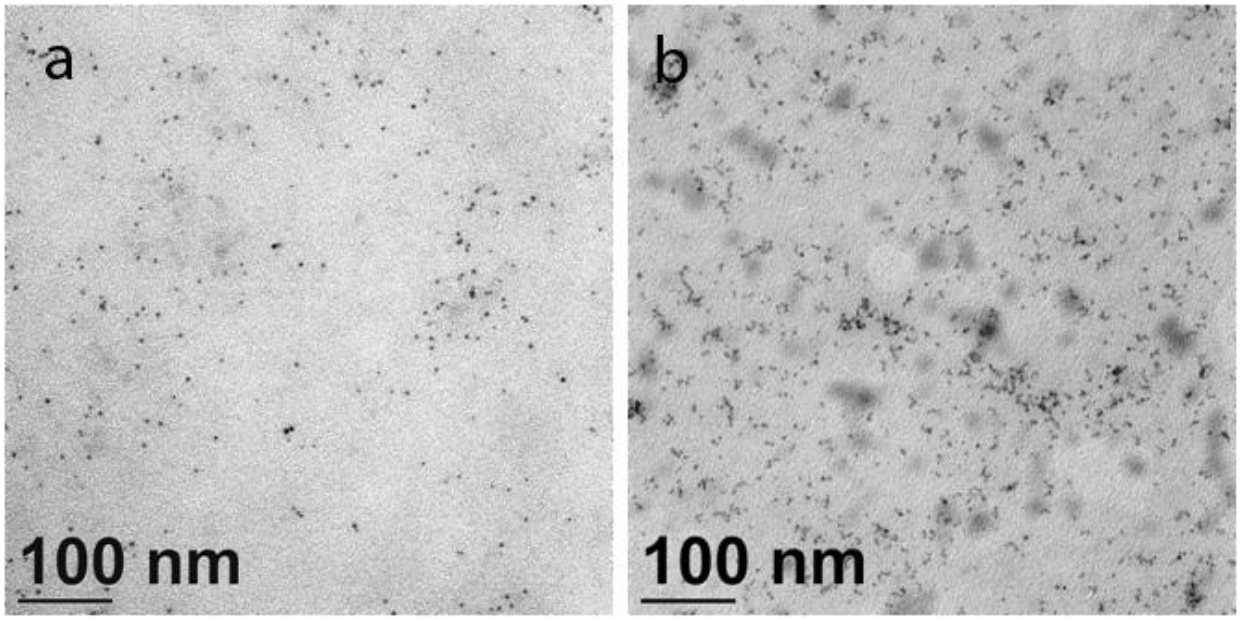

Figure S1. TEM images of CdS NPs formed in the presence of tetra-PPPDs at the dendrimer concentration of 0.85 mmol/L and the molar ratios N:Cd:S=1:0.1:1 (a, DNC-1) and N:Cd:S=1:0.3:3 (b, DNC-3).

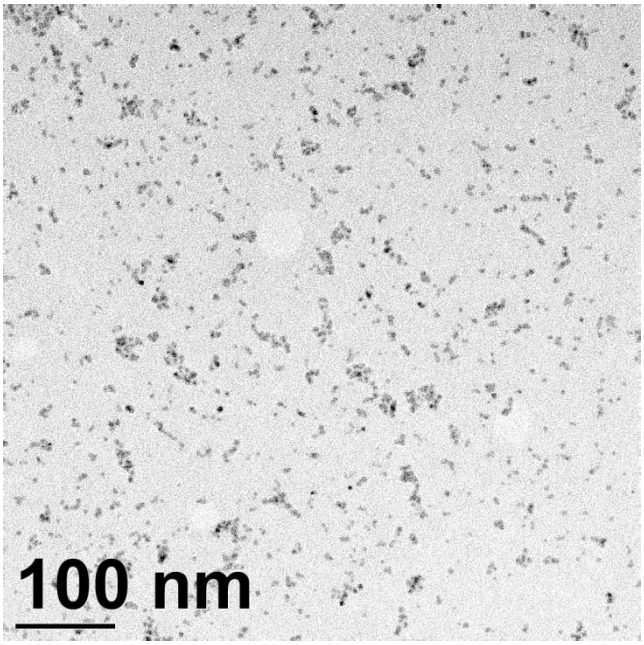

Figure S2. TEM image of CdS NPs formed in the presence of tri-PPPDs at the dendrimer concentration of 0.85 mmol/L and the molar ratio N:Cd:S=1:0.2:2 (DNC-5).

Complexation of CdO with tetra-PPPD

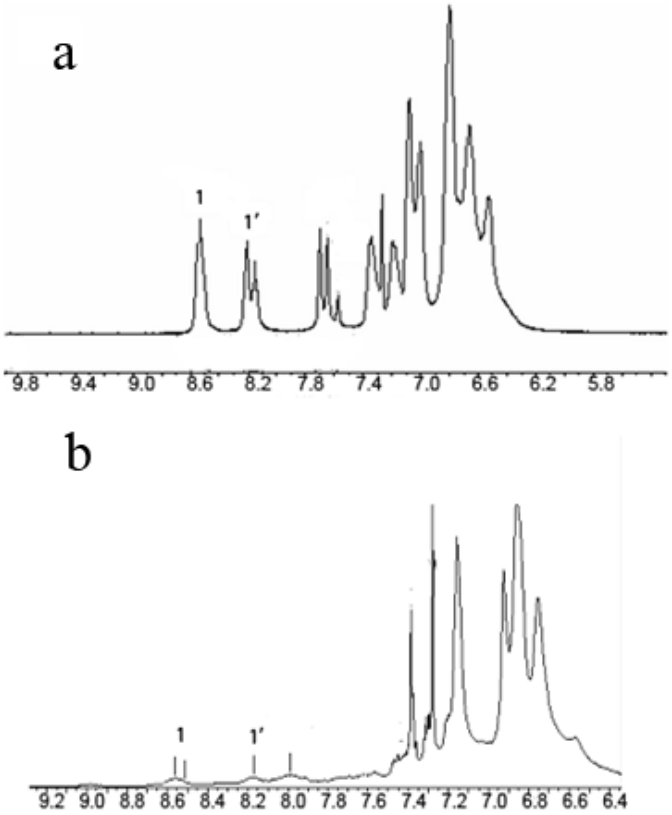

Figure S3. ^{1}H NMR spectra of tetra-PPPD (a) and CdO/tetra-PPPD (b). Signals with notations 1 and 1'are from α-protons of pyridine fragments.

Optical Properties of CdS/PPPD Nanocomposites

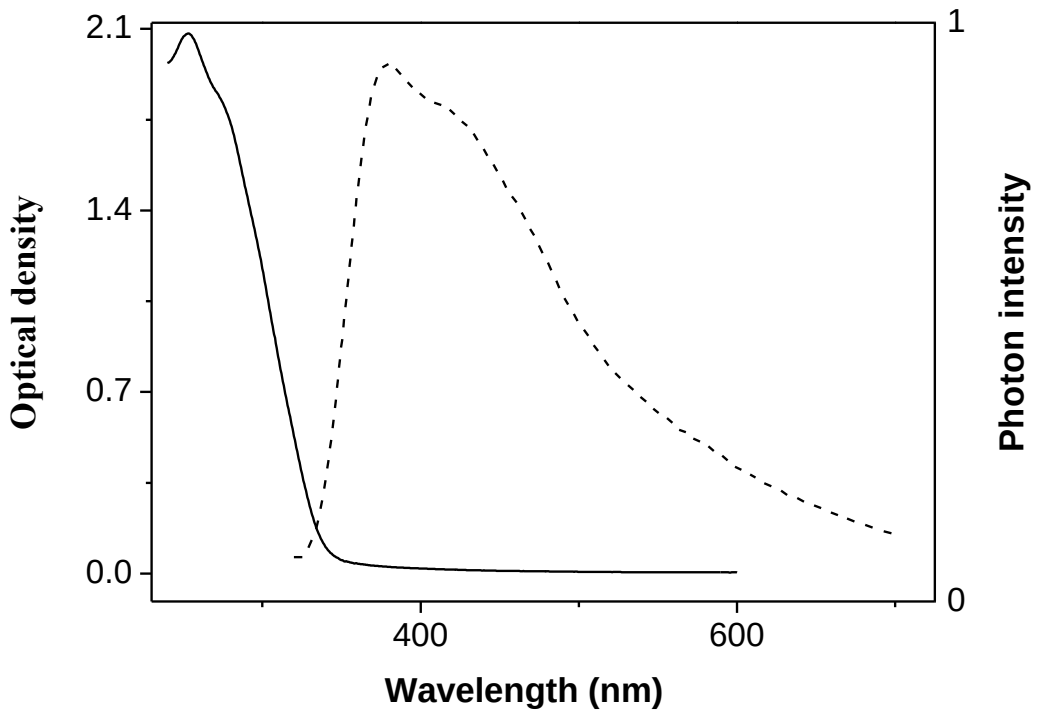

Figure S4. Absorption (left) and fluorescence (right) spectra of tetra-PPPD in chloroform at room temperature (the solution concentration of 1.6×10^{-5}M, the solvent layer L=0.2cm).

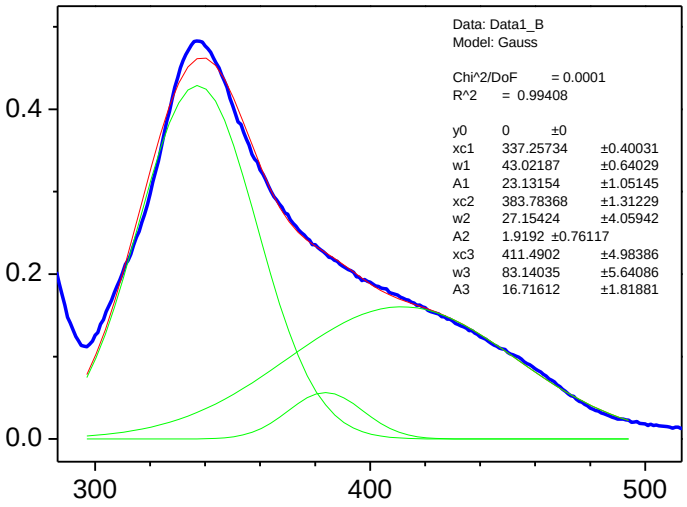

Figure S5. Multi-peak fitting performed for the absorption difference spectrum

Nanocomposite of CdS/PPD and Block Copolymer

Poly(styrene-*b*-acrylic acid) block copolymer, PS(15,000)-*b*-PAA(3,600), with M_w/M_n=1.2 was purchased from Polymer Source, INC and used as received. In a typical experiment, a stock solution of 5 mg of PS-*b*-PAA in 10 mL of THF has been prepared by stirring overnight (solution 1). Solution 2 has been prepared by 5 min sonication of 3.5 mg of DNC-7 in 1 mL of THF. Then 0.5 mL of solution 2 was mixed with 0.5 mL of solution 1 and stirred for 1 hr. Then THF was evaporated in vacuum and 1 mL of dionized water and 0.1 mL THF were added into the vial. The vial was sonicated for 15 min giving a turbid yellow solution. TEM image of this sample is presented in Figure S5.

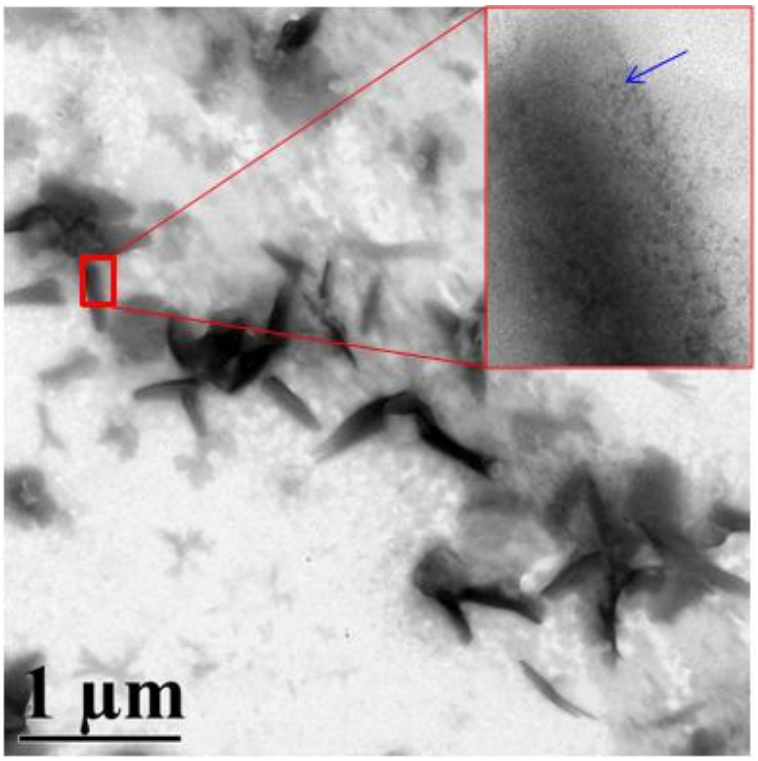

Figure S6. TEM image of DNC-7/PS-b-PAAA. Inset shows a higher magnification image displaying QDs incorporated in larger structures. The blue arrow shows CdS QDs.