Experimental Section

Materials

Cadmium acetylacetonate (98%, $Cd(acac)_2$), Tellurium powder (99.8%), Indium (III) chloride, anhydrous (In, 99.999%), Sulfur powder (99%) and Tri-*n*-octylphosphine (TOP, 97%) were purchased from Strem. Tris(trimethylsilyl)phosphine ($(TMS)_3P$, 98%) was purchased from Acros. Oleic acid (99%) was purchased from TCI. 1-hexadecylamine (HDA, 90%), tri-*n*-octylphosphine oxide(TOPO, 90%), Diethylzinc (Et_2Zn, 1.0 M solution in hexane), Tributylphosphine (TBP, 97%), Octadecene (ODE, 90%) were purchased from Aldrich. Phospholipids(1,2-distearoyl-*sn*-glycero-3-phosphoethanolamine-N-[methoxy(polyethylene glycol)-2000]) was purchased from Avanti. Nile Blue 690 perchlorate was purchased from Exciton. A TOP-Te solution (1.0 M) was prepared by dissolving 6.4g of tellurium in 50mL of TOP, yielding a dark green solution. A TBP-In solution (0.1 M) was prepared by dissolving 331.5mg of $InCl_3$ in 14mL of TBP. A $(TMS)_3P$ (1.0 M) stock solution was prepared by dissolving 0.66g of $(TMS)_3P$ in 1.37g of octadecene. A TBP-S solution was prepared by dissolving 0.32g of sulfur powder in 10mL TBP, yeliding a thin yellow solution. All stock solution was used in an inert glovebox.

Fabrication of CdTe Quantum Dots

To prepare the surfactants solution, 5.6g of TOPO and 4.5g of HDA in a flask were degassed at 123˚C for 2h. TOP (3mL) was injected to the solution from a glovebox. To prepare CdTe precursor solution, 93mg of $Cd(acac)_2$ and 3mL of TOP in another flask were degassed at 140˚C

for 2hrs, and then 0.2 mL of a TOP-Te solution was added to the precursor solution at room temperature. The CdTe precursor solution was injected into the surfactant solution of 350˚C under nitrogen atmosphere. After the injection, the solution was instantly cooled up to 200˚C and grown for 1hr. The solution was cooled to room temperature, and the CdTe QDs were then precipitated with an excess of ethanol and dried in air.

In-Situ Fabrication of InP/ZnS Shell-Shell QDs

First, CdTe QDs dissolved in hexane were added to 7.9g of octadecene and 0.16g oleic acid which were degassed at 105˚C for 2hrs. Plus, degassing was promptly carried out at 105˚C for 15 mins. Next, 0.5mL(0.05mmol) of TBP-In and 0.05mL(0.05mmol) of $(TMS)_3P$ (1M ODE mixture) were combined with ODE 0.5mL. This mixture was added dropwise into the CdTe core solution at 160˚C for approximately 5hrs or maintained until red-shift of emission peak stopped. Continually 0.1mL(0.1mmol) of diethylzinc and 0.1mL(0.1mmol) of TBP-S were slowly added dropwise into the CdTe/InP solution. This growth solution was maintained at same temperature for 2h. After aging time, the dots were precipitated out of solution with excess methanol or ethanol and dried in air.

Measurement of Quantum Yield

The room-temperature quantum yields (QY) were measured by comparing the integrated emission of the dots in solution to the emission of a solution of **Nile Blue 690 perchlorate** (Exciton, QY: 27% in MeOH, emission peak maximum: 660 nm) in methanol as a standard.

FACS analysis

HEK 293 cells were incubated for 90 min in medium lacking or containing CdTe/InP/ZnS. Cell death was quantified by FACS analysis after staining with Annexin V and propidine iodide (PI). Viable cells are Annexin V-/PI-. The Annexin V^+/PI- cells are early in the apoptotic process, whereas the Annexin V^+/PI^+ cells have lost cell membrane integrity and have taken up PI.