Supplementary Information for:

White-light Emission from Magic Sized Cadmium Selenide Nanocrystals

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Figure: Emission from a commercial white LED (Photon Micro-Light®, Photon Light.com), 4100 K fluorescent tube (Sylvania Octron® #F032), tungsten bulb (General Electric 100 W), and magic sized CdSe nanocrystals. The visible spectrum is denoted by the shaded area.

The complete author list and reference for reference 13:

Kasuya, A.; Sivamohan, R.; Barnakov, Y. A.; Dmitruk, I. M.; Nirasawa, T.; Romanyuk, V. R.; Kumar, V.; Mamkin, S. V.; Tohji, K.; Jeyadevan, B.; Shinoda, K.; Kudo, T.; Terasaki, O.; Liu, Z.; Beloludov, R. V.; Sundararajan, V.; Kawazoe, Y. *Nature Materials* **2004**, 3, 99-102.

Synthesis of Ultra-Small Cadmium Selenide Nanocrystals:

A Reagents

Tri-n-octylphosphine oxide (TOPO, 90% tech. grade), hexadecylamine (HDA 90% tech. grade) and octadecene (ODE, 90% tech. grade) were purchased from Aldrich and used as received. CdO (99.999% Puratrem), tri-n-butylphosphine (TBP, 97%), and selenium powder (200 mesh) were purchased from Strem and used as received. Dodecylphosphonic acid (DPA) was synthesized via the Abruzov reaction from triethylphosphite and 1-dodecylbromide followed by acid work up with concentrated HCl and recrystallization from cold ethylacetate. All other solvents were HPLC grade and purchased from Fisher Scientific unless otherwise noted.

Synthesis of Ultra-Small CdSe Nanocrystals

A 1.0 M solution of selenium in TBP was produced by dissolving 7.896 g selenium powder in 100 mL of TBP. The 0.10 M injection solution was made by dilution of the 1.0 M Se:TBP solution with ODE. This solution was stable for several days stored in a capped bottle, in ambient conditions at room temperature. The reaction solvent was mixed from a unit quantity of TOPO and HDA (7.2 g and 2.97 g respectively) along with 0.128 g of CdO and 0.496 g of DPA (scaled as necessary). These contents were heated in a 100 mL three neck flask under argon with vigorous stirring to 310 °C. A needle was placed in the septum to allow for an argon purge until the reaction solution reached 150 °C at which point the reaction vessel was considered water and oxygen free. Upon reaching reaction temperature (330 °C), 5 mL of the Se:TBP:ODE solution were swiftly injected and the temperature reduced to 270 °C as quickly as was possible without allowing the temperature to drop below 260 °C. To achieve ultra-small nanocrystals (e.g. < 20 Å), a second syringe of toluene (typically 5 mL) was injected to reduce the reaction temperature to <150 °C within 2-10 seconds after the initial injection (depending on the desired size).