

Supporting Information for:

**Photo-Stability of colloidal PbSe and PbSe/PbS core/shell
nanocrystals in solution and in the solid state**

Jan W. Stouwdam, Jingning Shan and Frank C. J. M. van Veggel*

*Department of Chemistry, University of Victoria, P.O. Box 3065, Victoria BC, Canada
V8W 3V6 E-mail: fvv@uvic.ca*

Andras G. Pattantyus-Abraham, Jeff. F. Young*

*Department of Physics and Astronomy, University of British Columbia, Vancouver,
Canada V6T 1Z1*

Mati Raudsepp

*Department of Earth and Ocean Sciences, University of British Columbia,
Vancouver, Canada V6T 1Z4*

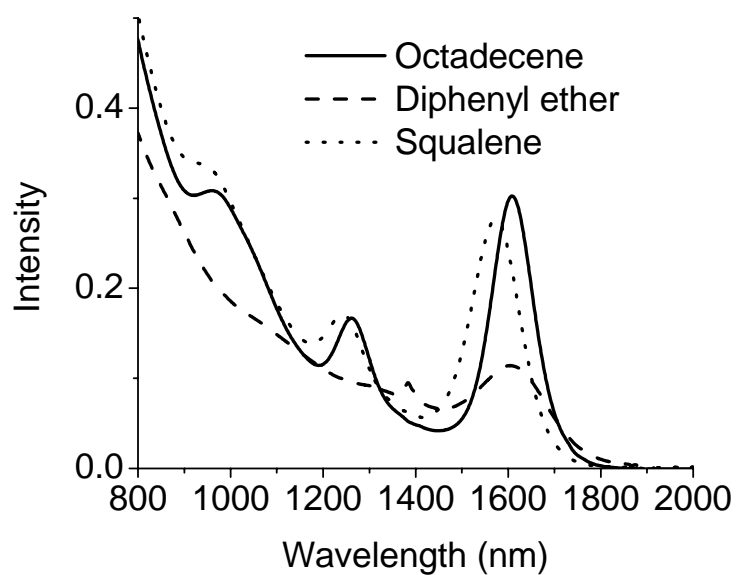


Figure S1. Absorption spectra of PbSe NCs in tetrachloroethylene. The NCs were synthesized in different solvents, octadecene (solid line), diphenyl ether (dashed line), and squalene (dotted line), using an injection temperature of 120 °C and a reaction time of 4 minutes.

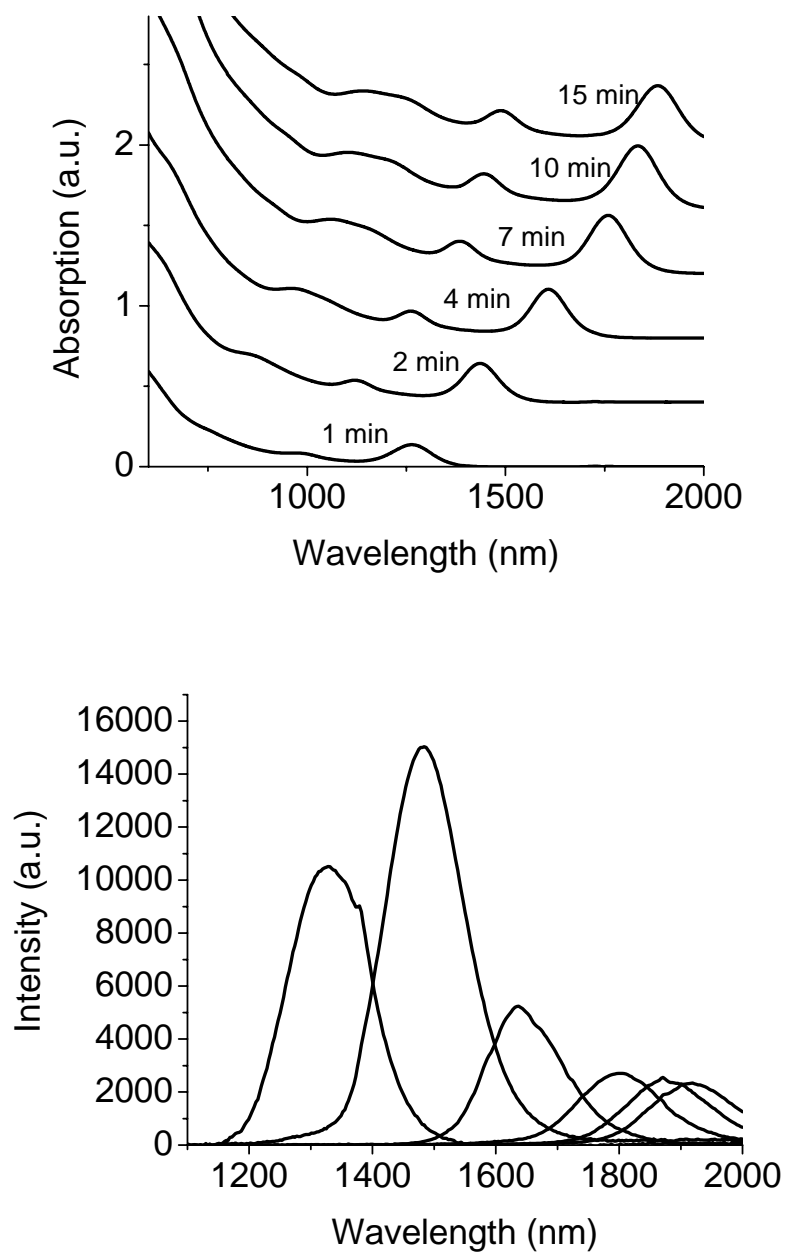


Figure S2: Evolution of the absorption spectrum (top) and emission spectra (bottom, $\lambda_{\text{ex.}}$ 980 nm) of PbSe NCs synthesized in octadecene. The offset in the absorption spectra is for clarity (1 min sample on far left, 15 min sample on far right).

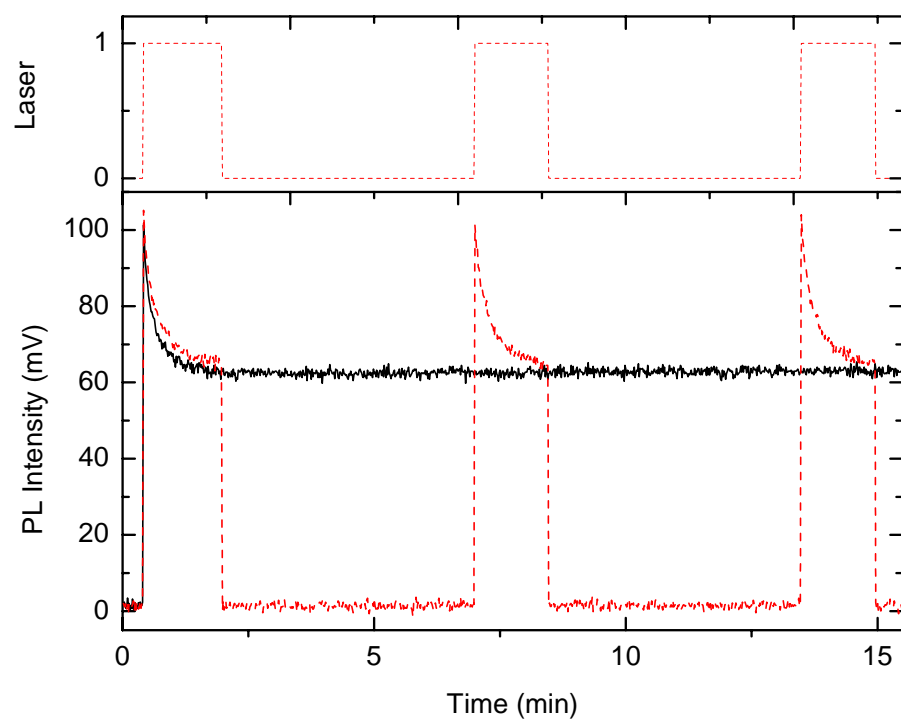


Figure S3. Initial PbSe luminescence decay under continuous (solid line) and intermittent (dashed line) illumination.

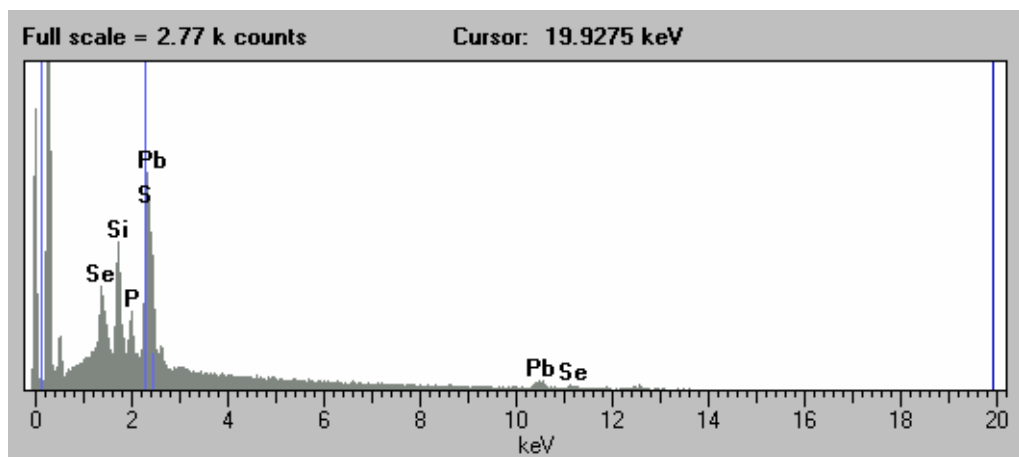


Figure S4. EDS spectrum of PbSe/PbS.

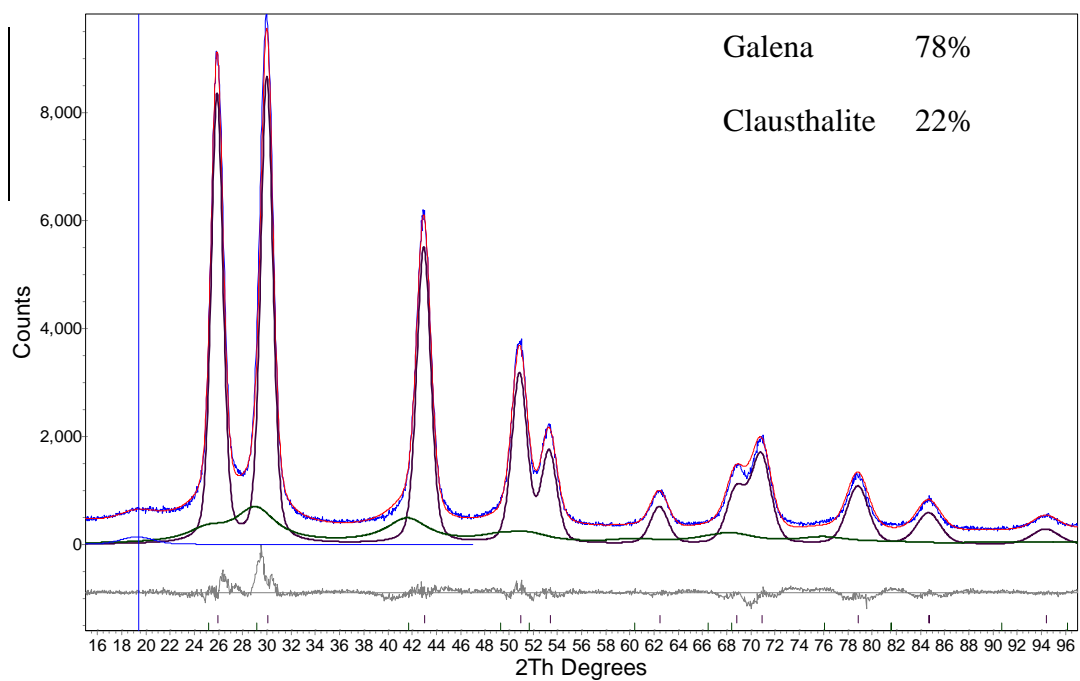


Figure S5. Rietveld refinement plot of XRD data from PbSe/PbS (prepared using TMS₂S source). Green and brown bold lines are the calculated patterns of PbSe and PbS, respectively. Blue pattern is observed data; red line is total calculated pattern; grey line is difference pattern.

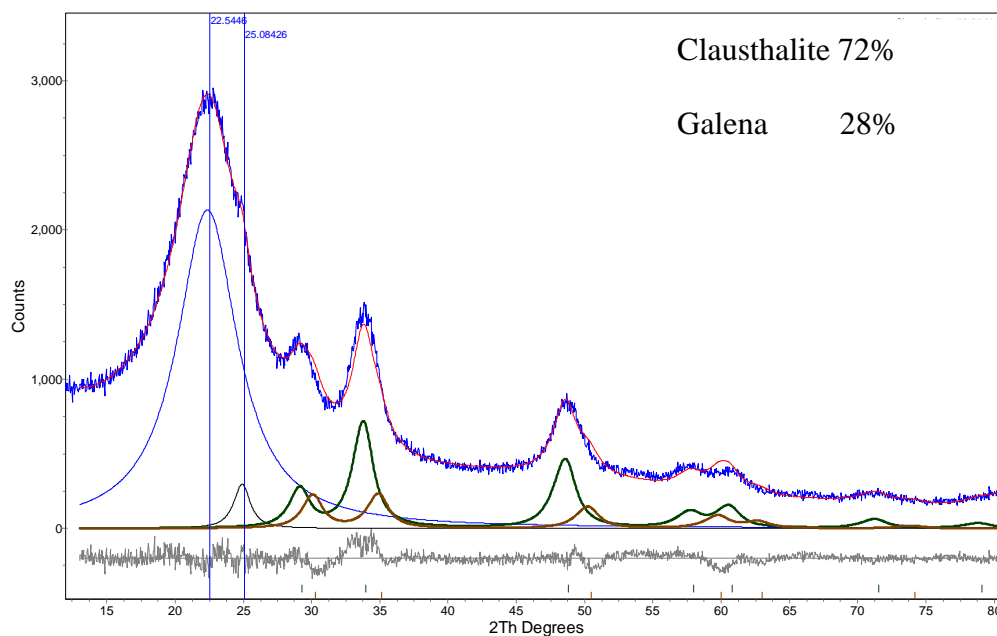


Figure S6. Rietveld refinement plot of XRD data from PbSe/PbS (prepared using TOP-S source). Green and brown bold lines are the calculated patterns of PbSe and PbS, respectively. Blue pattern is observed data; red line is total calculated pattern; grey line is difference pattern.

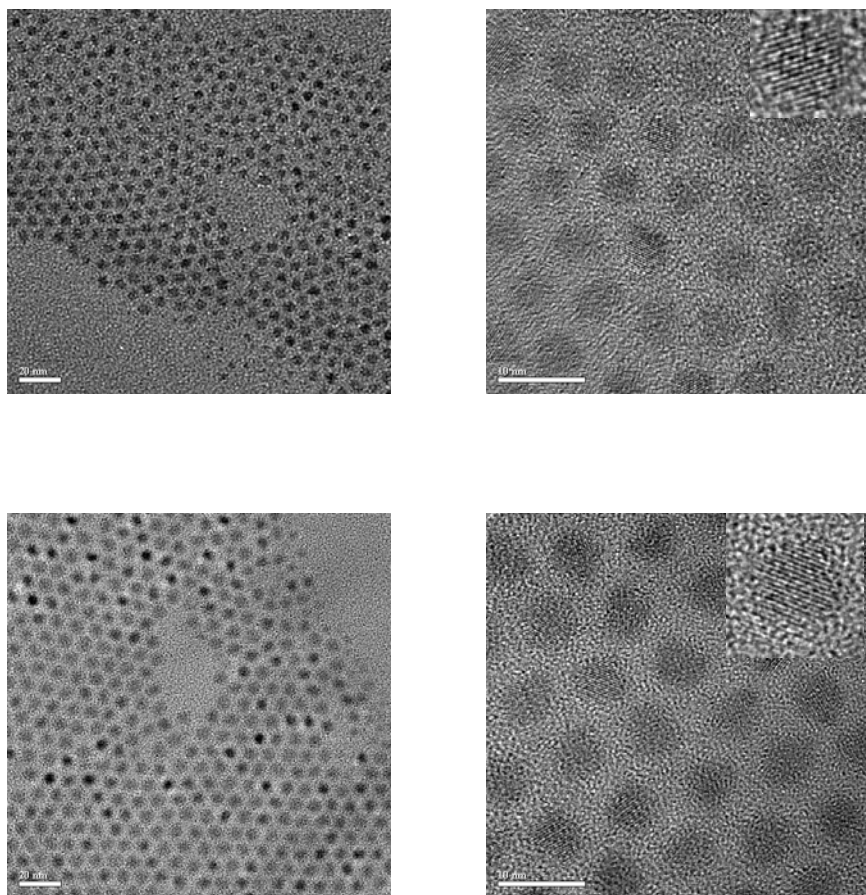


Figure S7. TEM (left) and HRTEM (right) of PbSe core (up) and PbSe/PbS core/shells (bottom). Scalar bar = 20 nm for TEM and 10 nm for HRTEM. Inset HRTEM of PbSe = 4.3 nm; PbSe/PbS = 5.3 nm.