Electronic Supplementary Information

Slow Colloidal Growth of PbSe Nanocrystals for Facile Morphology and Size Control

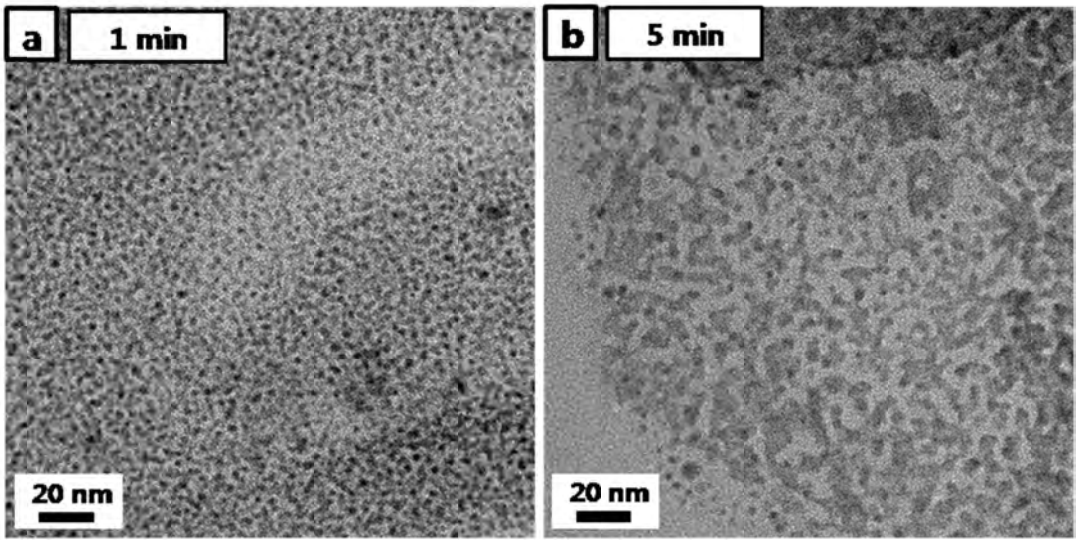

Figure S1. TEM images of intermediates at a) 1 min and b) 5 min reaction times prior to formation of PbSe NSs.

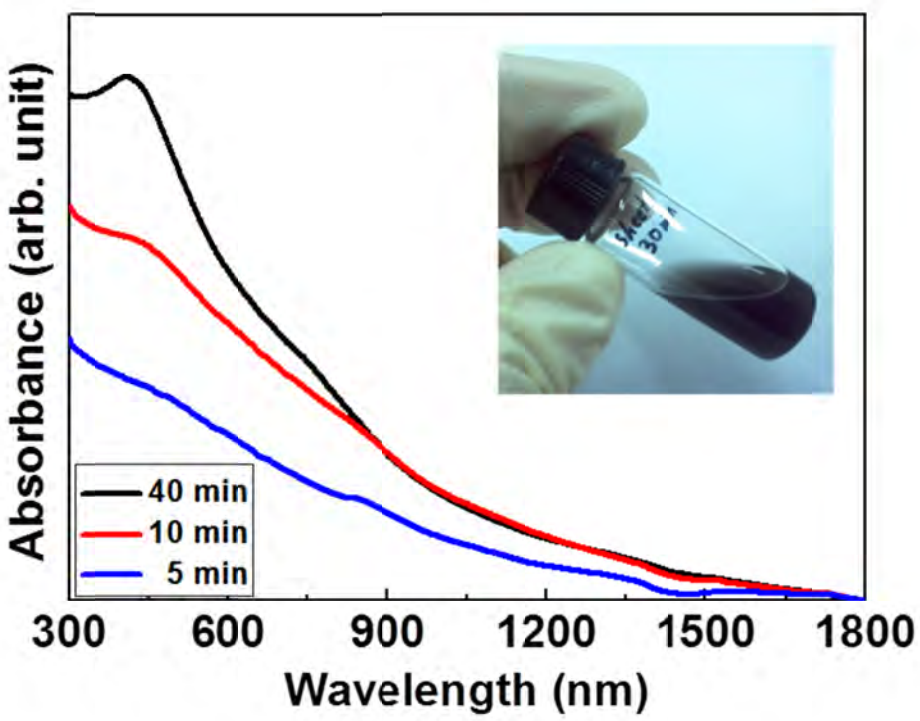

Figure S2. Absorption spectra of samples taken at 5, 10, and 40 min during NS growth. Inset shows a photograph of the dispersion taken at 30 min. The times in the figure indicate the time after the completion of injection.

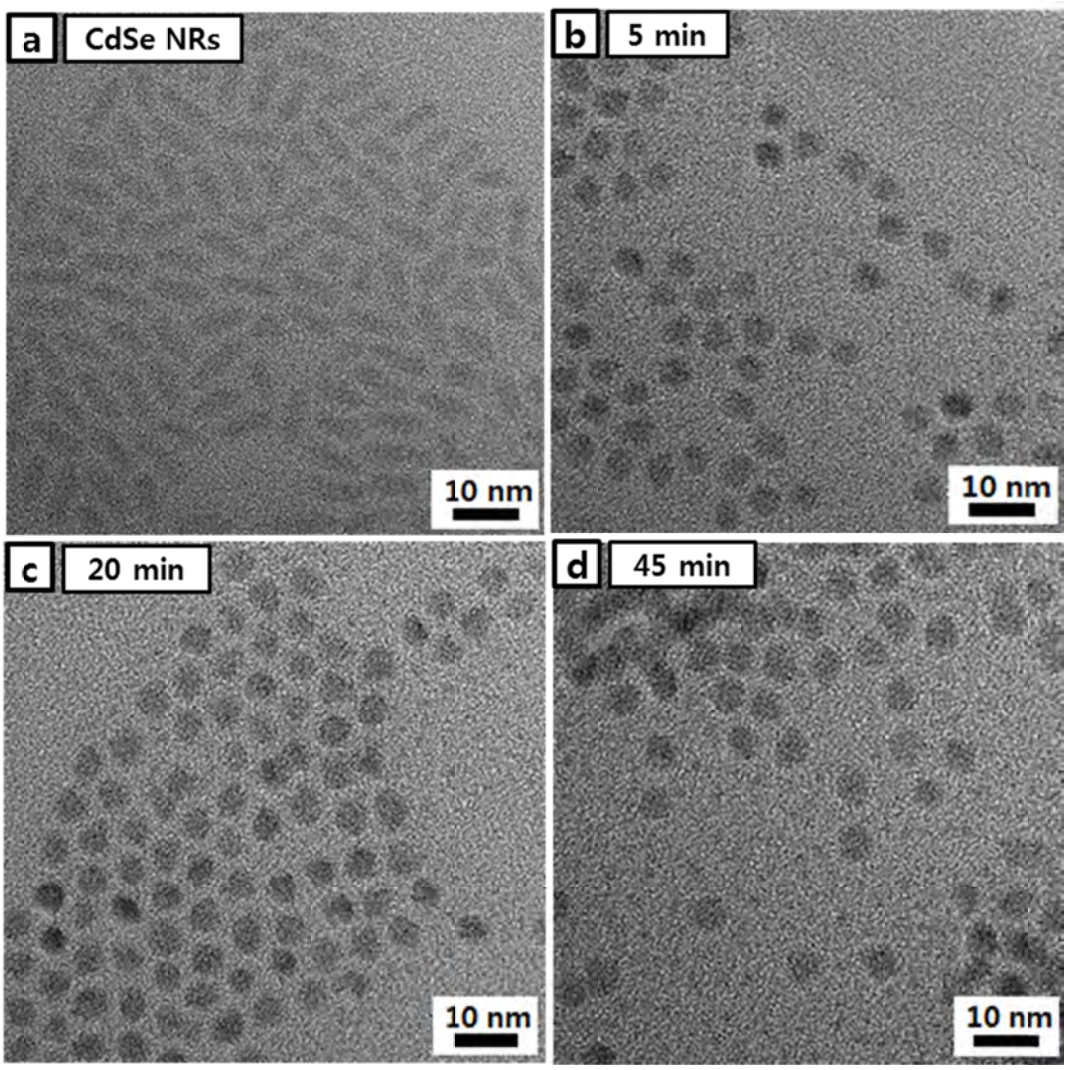

Figure S3. TEM images of a) as-prepared CdSe NRs and b-d) PbSe NCs synthesized in the presence of CdSe NRs. The time on each image denotes reaction time after the completion of injection of precursor solution.

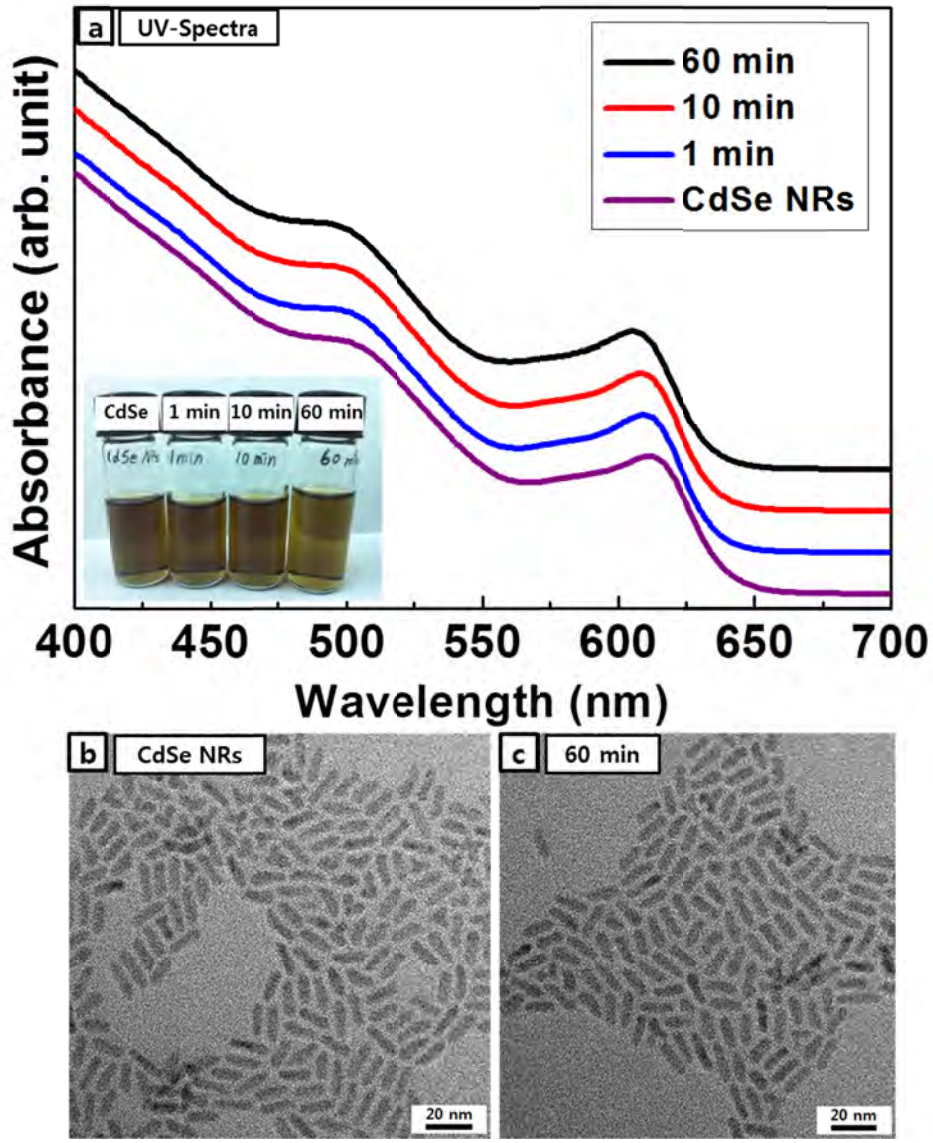

Figure S4. Impact of OA on stability of CdSe NRs at reaction temperature. a) Absorption spectra of as-prepared CdSe NRs and those at different aging times, and their photograph (inset). b) TEM image of as-prepared CdSe NRs. c) TEM image of CdSe NRs reacting with excess OA for 60 min at 150 °C. The times in the figures indicate the time after the completion of injection.

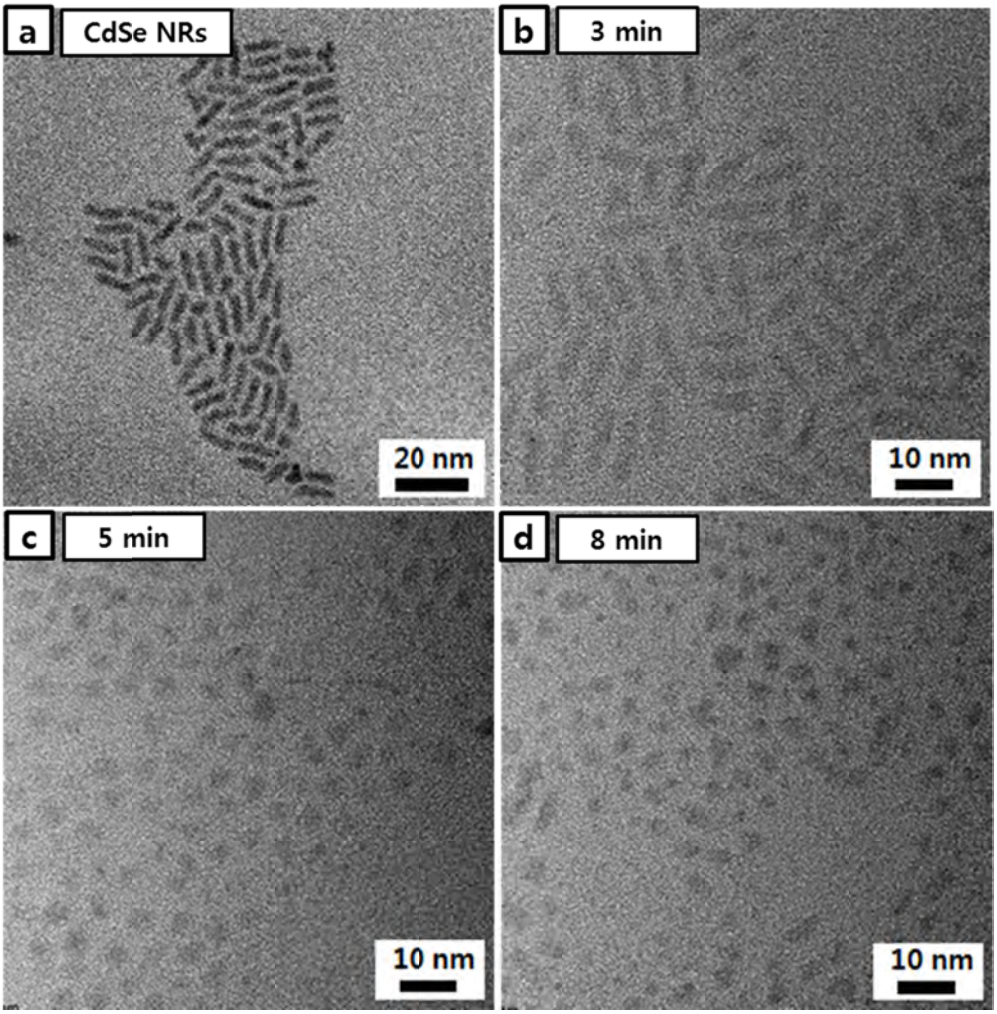

Figure S5. TEM images of a) CdSe NRs and b-d) aliquots withdrawn at various time intervals since the onset of injection of precursor solution.

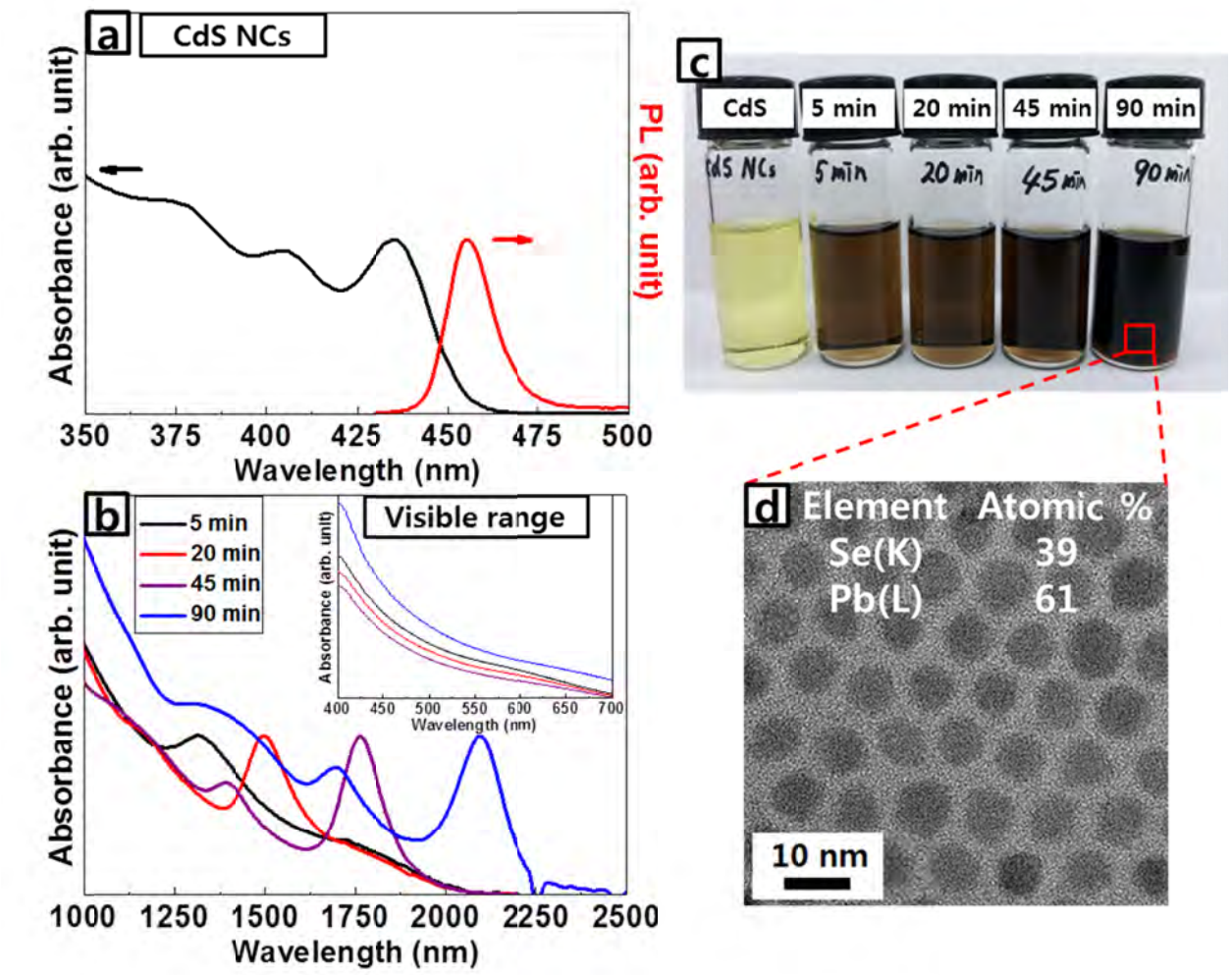

Figure S6. a) Absorption and PL spectra of as-synthesized CdS NCs, b) absorption spectra of PbSe NCs in both infra-red and visible range, c) photographs of sample dispersions, and d) high-resolution TEM image of PbSe NCs reacted for 90 min and results of EDX analysis (inset). The times in the figures indicate the time after the completion of injection.

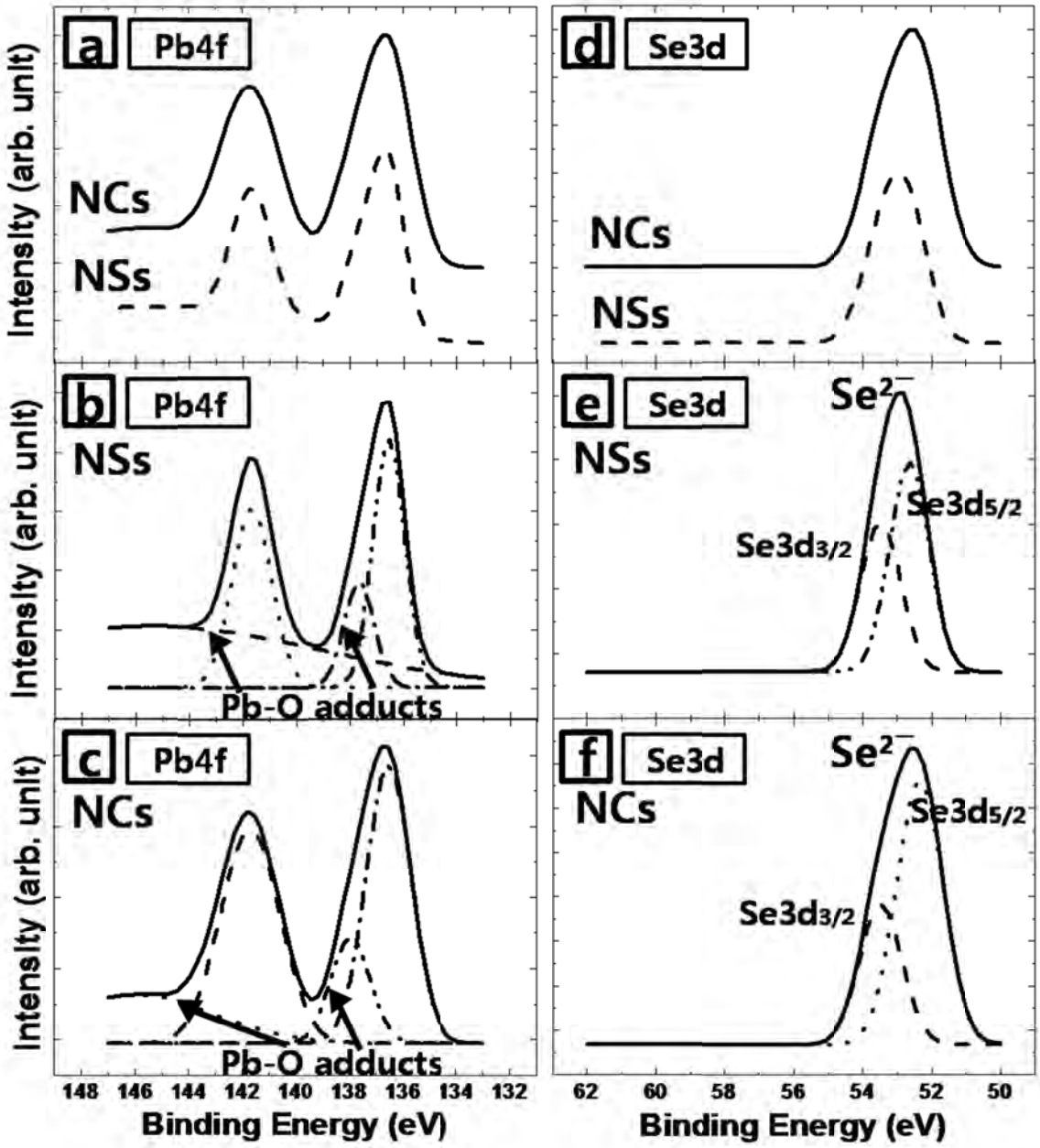

Figure S7. XPS survey spectra of PbSe NSs and PbSe NCs reacted for 120 min after injection completion in the presence of CdSe NCs.

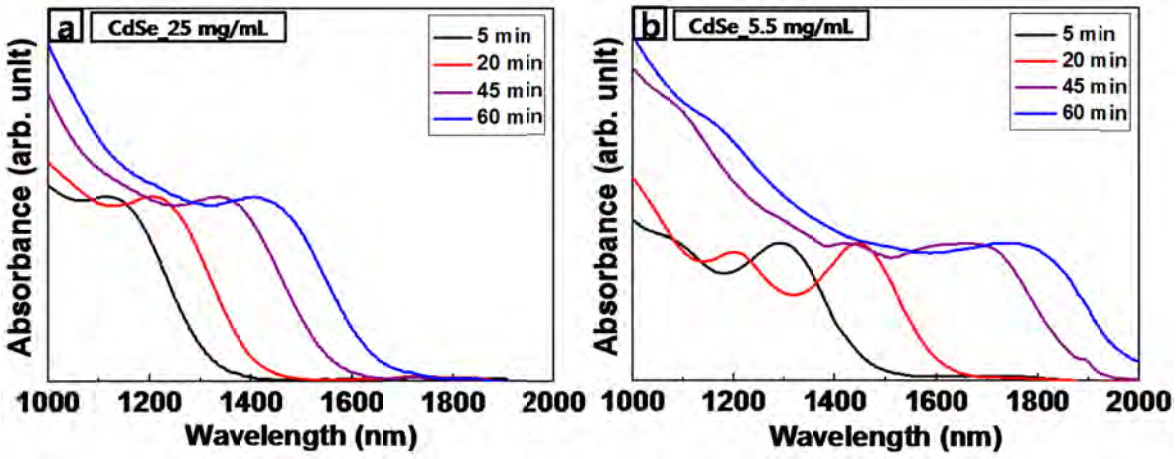

Figure S8. Absorption spectra of PbSe NCs synthesized in a) (2.2 mL of 25 mg/mL) and b) (2.2 mL of 5.5 mg/mL) of CdSe NCs dispersion. The times in the figures indicate the time after the completion of injection.

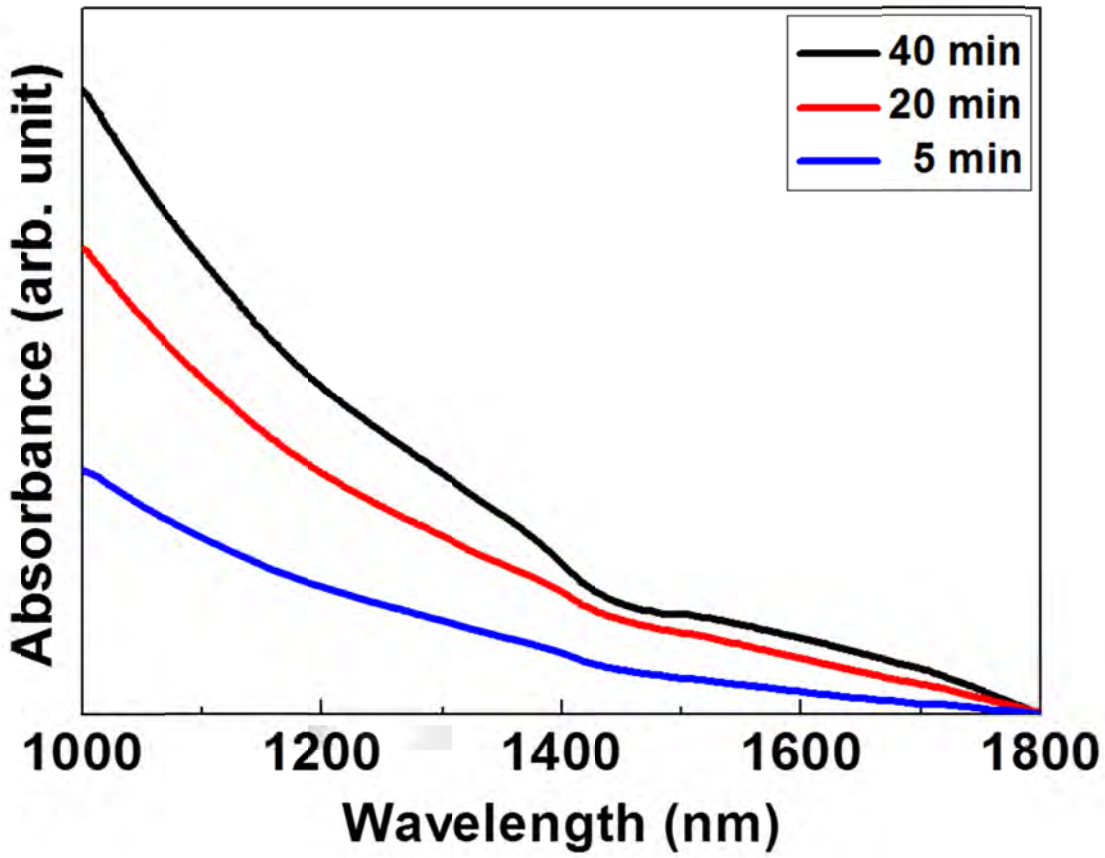

Figure S9. Absorption spectra of products in the presence of Cd-oleate and phenyl ether heated to 150 °C. Aliquots were taken 5 (blue), 20 (red), and 40 min (black) after complete injection of precursor solution.

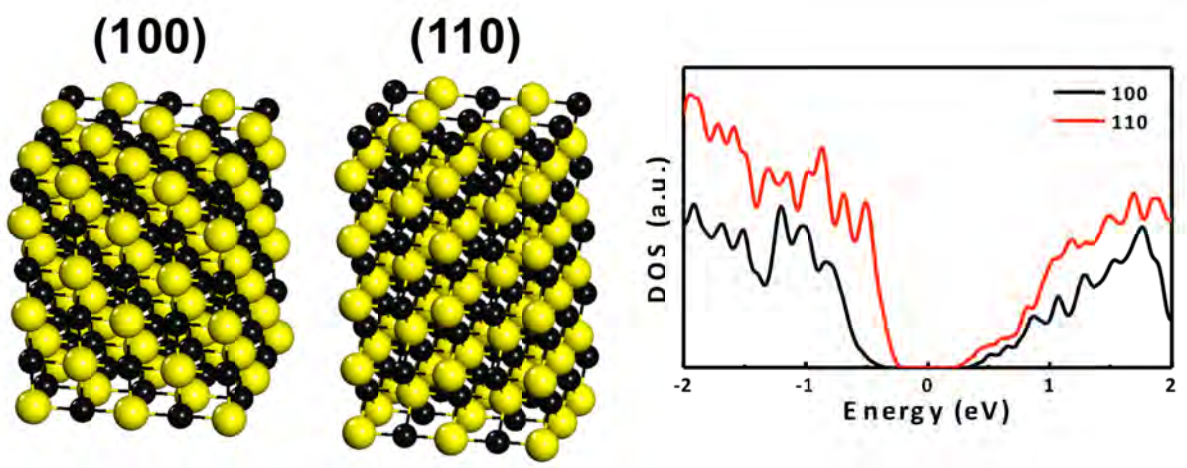

Figure S10. Perspective view of the (100) and (110) PbSe surfaces and their electronic structures. The surface energies are 0.21 and 0.41 J/m^2, respectively, for the (100) and (110) surfaces. The (110) surface is more unstable than (100) due to the lower atomic packing density.

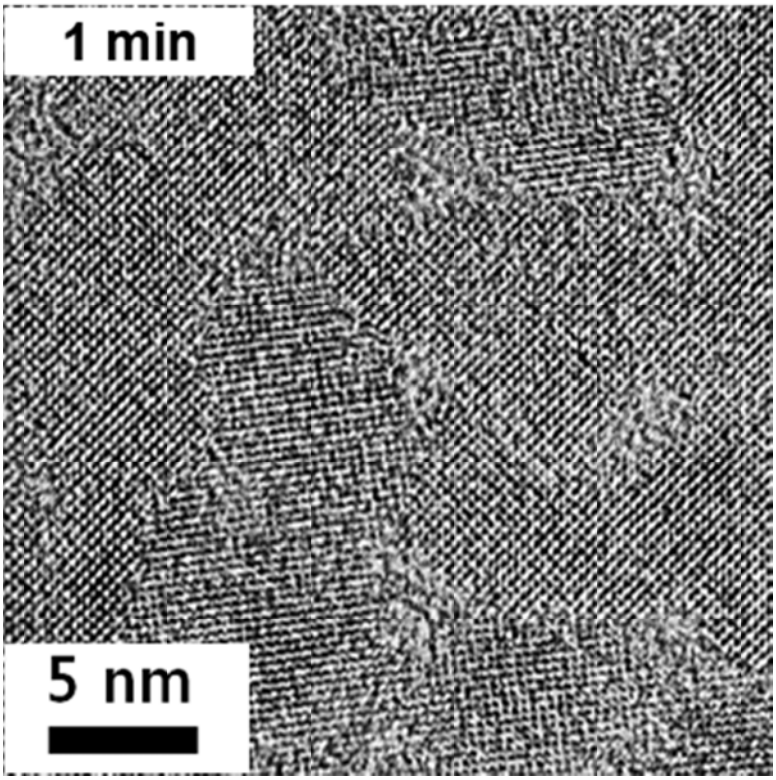

Figure S11. HRTEM image of PbSe nanocrystals synthesized 1 min after dropwise injection of Pb-oleate and TOP-Se.

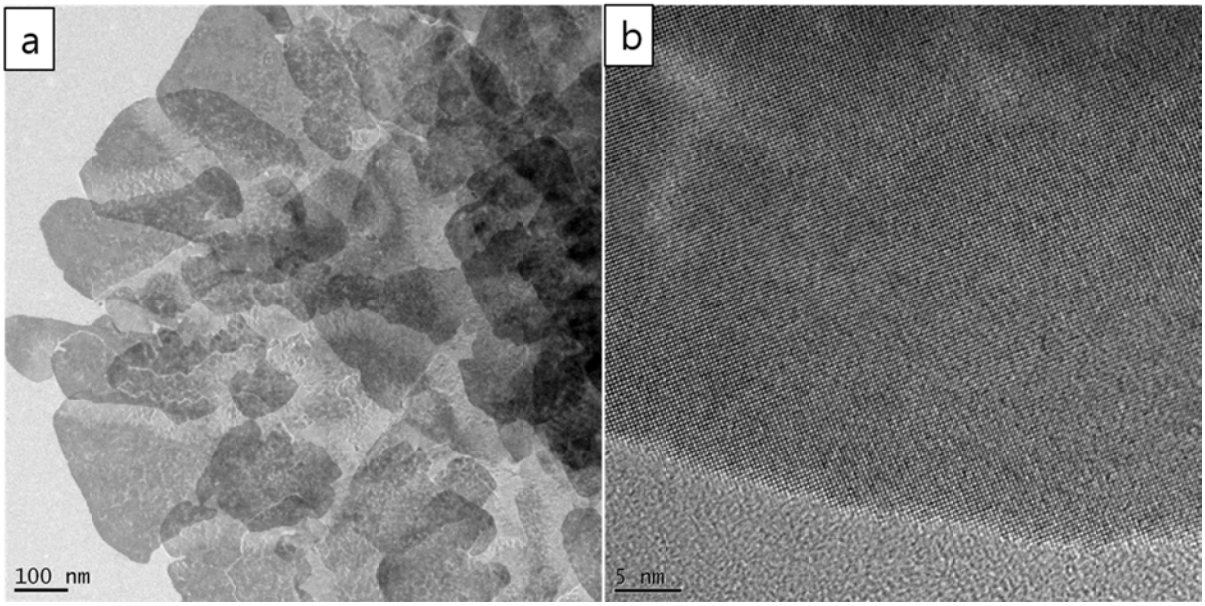

Figure S12. TEM images of PbSe nanos**h**eets prepared via slow growth.