

# Engineering Brightness Matched Indium Phosphide Quantum Dots

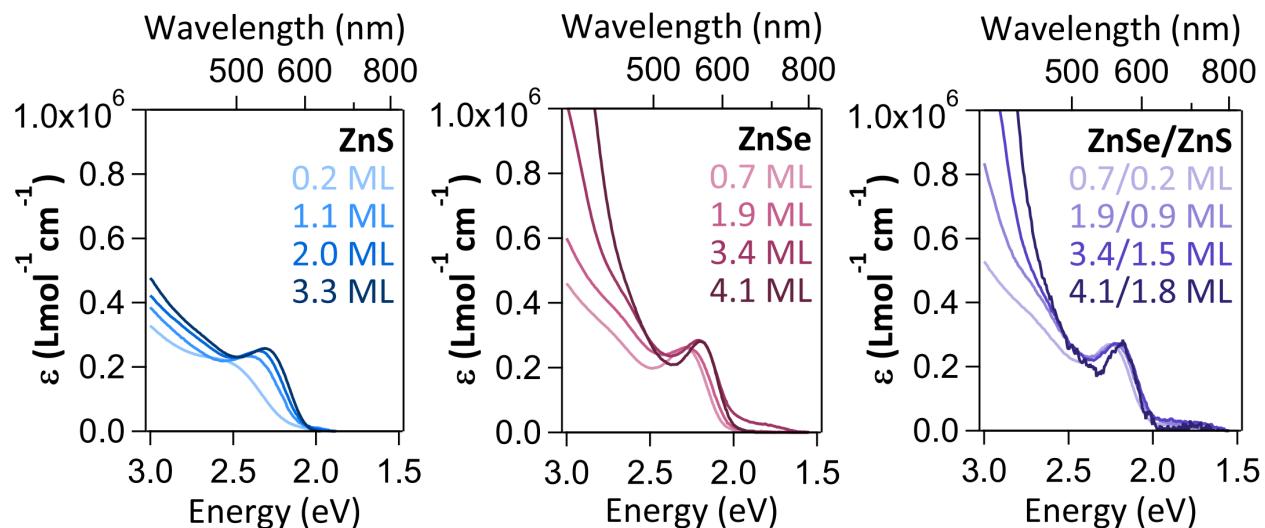
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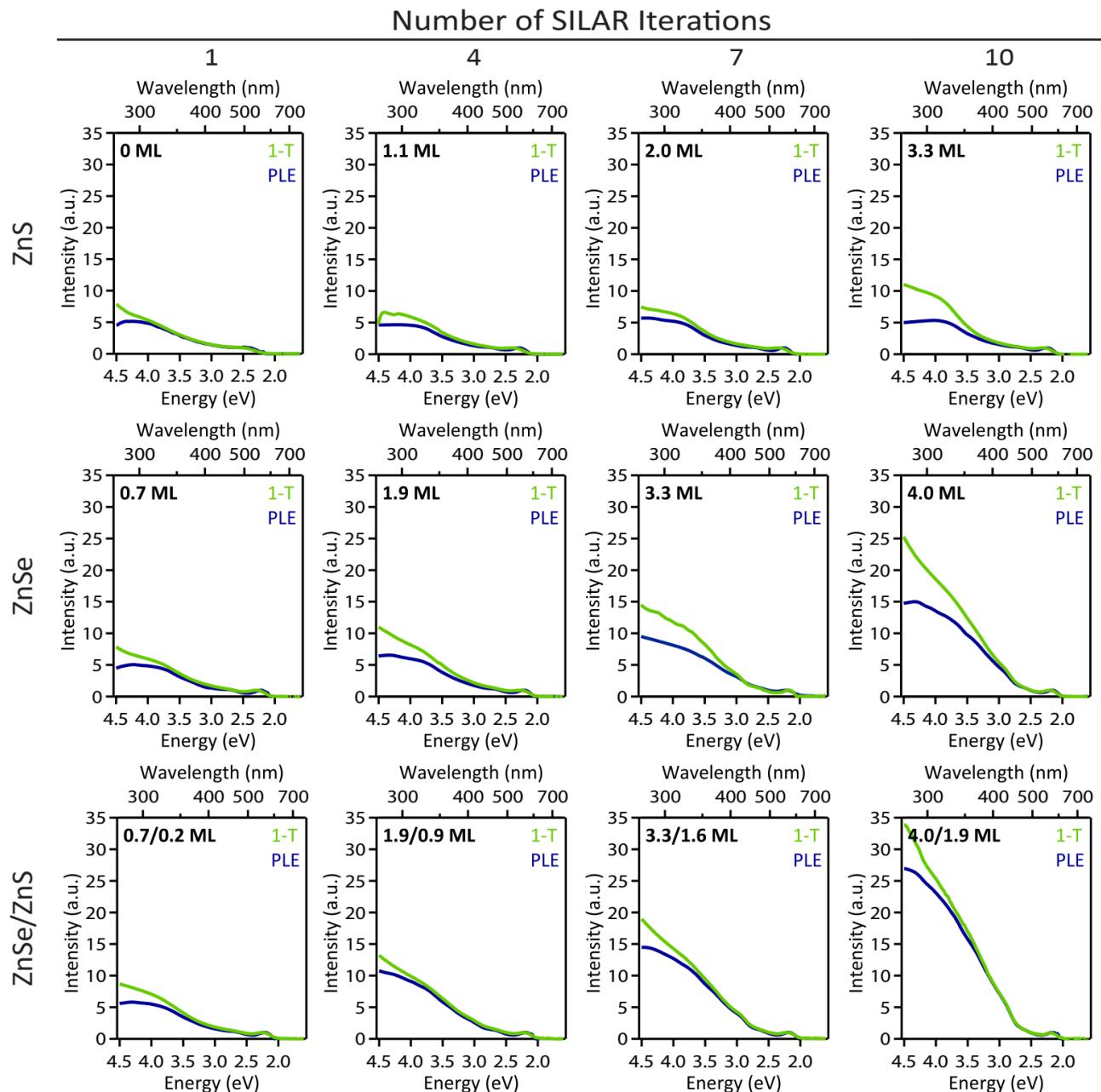
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**Table S1.** Summary of the properties of CdSe and InP core nanocrystals shown in Figure 1.

	Sample	1S peak (nm)	Abs at 1S peak	Diameter (nm)	$\epsilon$ at 400 nm ( $10^5 \text{ L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$ )	$\epsilon_{QD}/\epsilon_{QD495}$ at 400 nm
CdSe	QD495	495	0.101	3.5	2.05	1.00
	QD510	510	0.141	3.8	2.69	1.31
	QD550	550	0.454	4.7	4.64	2.27
	QD570	570	0.597	5.3	7.54	3.68
	Sample	1S peak (nm)	Abs at 1S peak	Diameter (nm)	$\epsilon$ at 400 nm ( $10^5 \text{ L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$ )	$\epsilon_{QD}/\epsilon_{QD480}$ at 400 nm
InP	QD480	479	0.653	3.2	2.75	1.00
	QD505	507	0.726	3.5	4.16	1.51
	QD560	559	0.934	4.0	6.66	2.43
	QD590	590	1.057	4.3	6.74	2.45



**Figure S1.** Molar extinction coefficients of InP/ZnS, InP/ZnSe, and InP/ZnSe/ZnS heterostructures, zoomed in from Figure 3B.



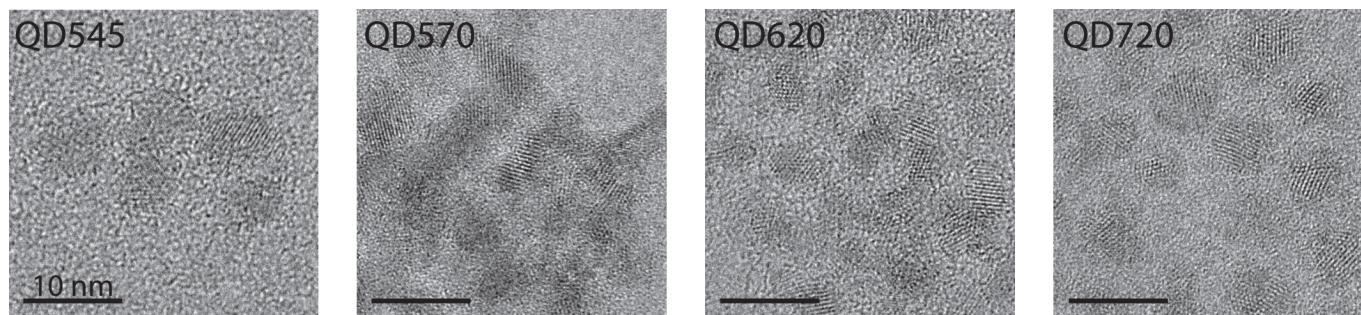
**Figure S2.** PLE and absorption factor spectra for InP/ZnS, InP/ZnSe, and InP/ZnSe/ZnS samples.

**Table S2.** Absolute QY of samples prepared through precipitation and resuspension without and with subsequent Zn:TOP treatment.

Sample		QY (%) ± abs. error (%)	
Composition	Shell Thickness	Precipitation/Resuspension (P/R)	TOP + P/R + Zn:TOP treatment
InP/ZnS	2.0 ML	25.76 ± 4.21	27.64 ± 3.12
	3.3 ML	25.73 ± 2.29	28.84 ± 5.18
InP/ZnSe	1.9 ML	16.07 ± 0.84	28.70 ± 2.17
	3.4 ML	8.40 ± 0.56	29.32 ± 2.88
	4.1 ML	8.95 ± 0.51	20.42 ± 0.98
InP/ZnSe/ZnS	1.9/0.9 ML	14.12 ± 0.54	24.71 ± 2.16
	3.4/1.5 ML	25.61 ± 1.05	33.81 ± 2.59
	4.1/1.8 ML	13.73 ± 0.63	25.50 ± 2.30

**Table S3.** Summary of 1S peak position of core InP nanocrystals, and number of SILAR iterations used for the synthesis of InP/ZnSe/ZnS QDs shown in Figures 6 and 7.

Composition	Sample	Core 1S Peak (nm)	No. of SILAR Iterations	
			ZnSe	ZnS
InP/ZnSe/ZnS	QD550	447	7	3
	QD570	497	4	3
	QD620	565	1	3
	QD700	648	1	3

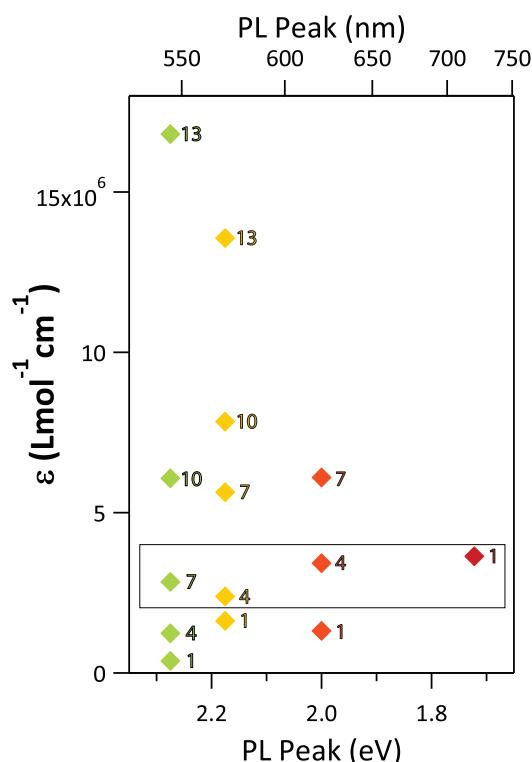


**Figure S4.** Representative TEM images of InP/ZnSe/ZnS samples. The scale bars indicate 10 nm.

**Table S4.**  $B_{\text{rel}}$  values and fold change in  $B_{\text{rel}}$  for CdSe/ZnS, InP/ZnS, and InP/ZnSe/ZnS samples emitting throughout the visible wavelength range.

Composition	Sample	QY $\pm$ abs. error (%)	$\epsilon_{400}$ ( $10^6 \text{ L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$ )	$B_{\text{rel}}$ ( $10^6 \text{ L} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$ )	Fold $B_{\text{rel}}$ Mismatch
CdSe/ZnS	QD525*	$24.04 \pm 2.91$	0.26	0.06	1.0
	QD565*	$22.90 \pm 1.99$	0.60	0.14	2.2
	QD585*	$22.97 \pm 2.78$	1.41	0.32	5.1
	QD605*	$28.54 \pm 2.88$	3.02	0.86	13.6
	QD655*	$43.27 \pm 3.10$	4.16	1.80	28.5
	QD705*	$22.11 \pm 5.54$	9.45	2.09	33.0
InP/ZnS	QD522	$32.43 \pm 4.28$	0.18	0.06	1.0
	QD577	$43.02 \pm 3.55$	0.66	0.28	4.8
	QD666*	$18.10 \pm 4.17$	1.47	0.27	4.5
InP/ZnSe/ZnS	QD545	$18.34 \pm 2.25$	2.09	0.38	1.0
	QD570	$31.43 \pm 2.20$	1.63	0.51	1.3
	QD620	$19.58 \pm 2.25$	1.31	0.25	0.6
	QD720	$10.22 \pm 2.11$	3.64	0.37	1.0

\* Commercially sourced samples.



**Figure S5.** Molar extinction coefficient ( $\epsilon$ ) of InP/ZnSe/ZnS samples at 400 nm, demonstrating an increasing trend in  $\epsilon$  with increasing thickness of the intermediate ZnSe shell. The black box designates QDs with similar  $\epsilon$  values.