Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Composition effect on the optical properties of the aqueous synthesized Cu-In-S and Zn-Cu-In-S quantum dot nanocrystals

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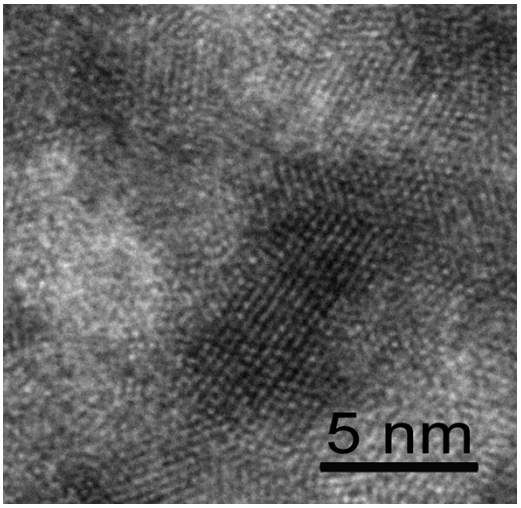

Figure S1. High resolution TEM image of Cu-In-S QDs with a Cu:In ratio of 0.6.

	Feed ratio (MPA excluded)				EDX results			
	Zn(%)	Cu(%)	In(%)	S(%)	Zn(%)	Cu(%)	In(%)	S(%)
0%ZnCuInS	0	18.75	31.25	50	0.00±0.00	18.62±2.44	32.83±2.50	48.55±3.65
10%ZnCuInS	5	16.875	28.125	50	5.07±0.26	15.74±0.33	25.20±5.84	53.99±6.29
30%ZnCuInS	15	13.125	21.875	50	14.25±5.04	10.36±2.38	19.97±0.78	55.43±6.50
50%ZnCuInS	25	9.375	15.625	50	18.83±3.09	6.08±0.59	14.32±1.34	60.77±4.08
70%ZnCuInS	35	5.625	9.375	50	25.49±0.45	2.83±0.68	9.17±0.82	62.51±1.19

Table S1. The feed ratio of Zn, Cu, In, S in reaction mixtures and the EDX determined composition ratio in prepared ZCIS QDs.

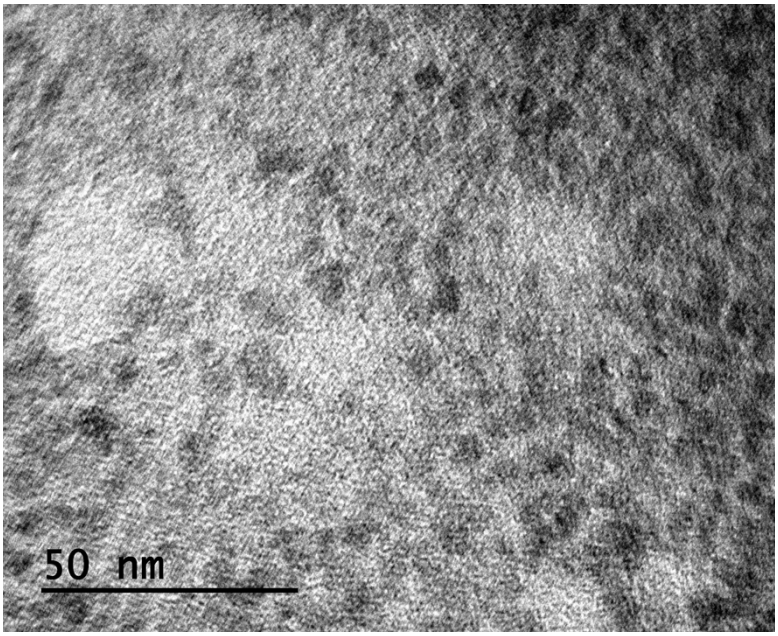

Figure S2. TEM image of 70% ZCIS QDs.

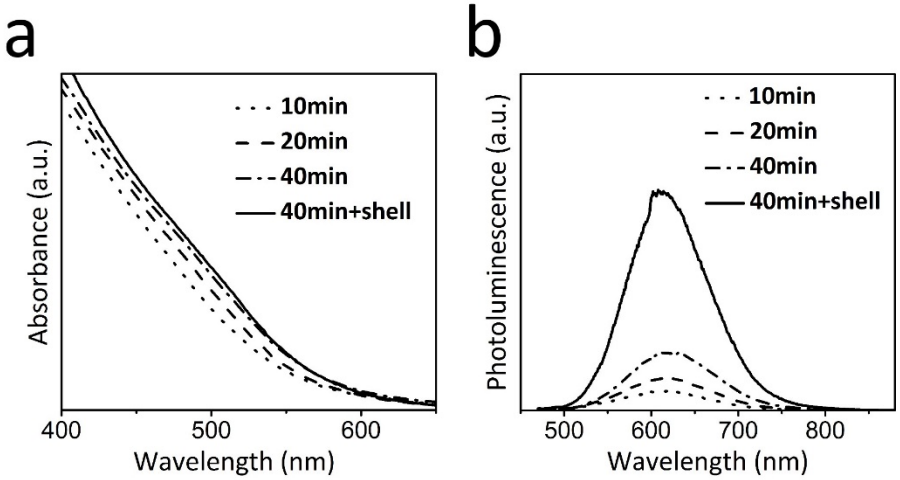

Figure S3. Temporal evolution of (a) absorption and (b) photoluminescence spectra in a growth reaction of ZCIS/ZnS QDs.

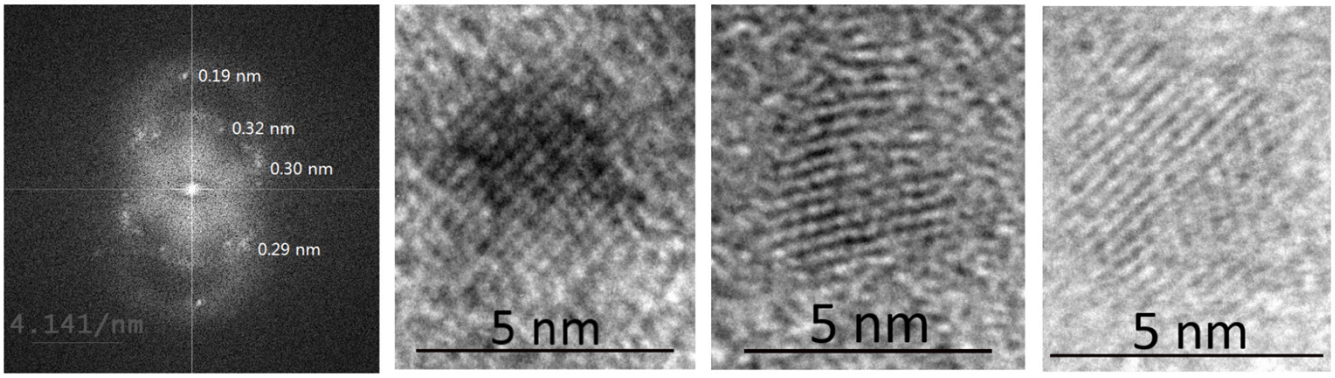

Figure S4. FFT pattern and TEM images of 30% ZCIS/ZnS QDs.

Samples	A1	t1 (ns)	A2	t2 (ns)	Average lifetime (ns)
CIS/ZnS	0.14537	5.08986	0.85463	191.0669	161.0515
10%ZCIS/ZnS	0.21174	4.83501	0.78826	144.3757	110.0229
50%ZCIS/ZnS	0.27424	3.50362	0.72576	131.0161	89.01911

Table S2. The decay constants of the fitted luminescence decay curves. The fitting formula is y=A1*exp(-t/t1)+A2*exp(-t/t2), in which A1+A2=1.

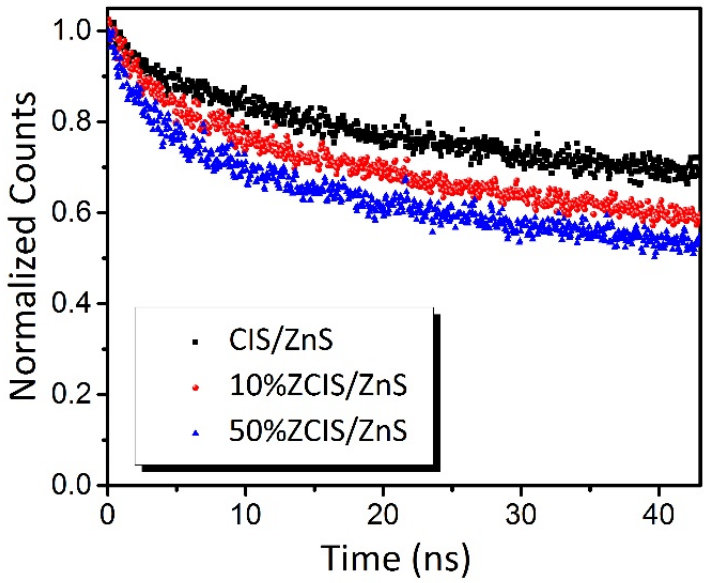

Figure S5. Luminescence decay curves of the 0%, 10% and 50% ZCIS/ZnS QDs in water.

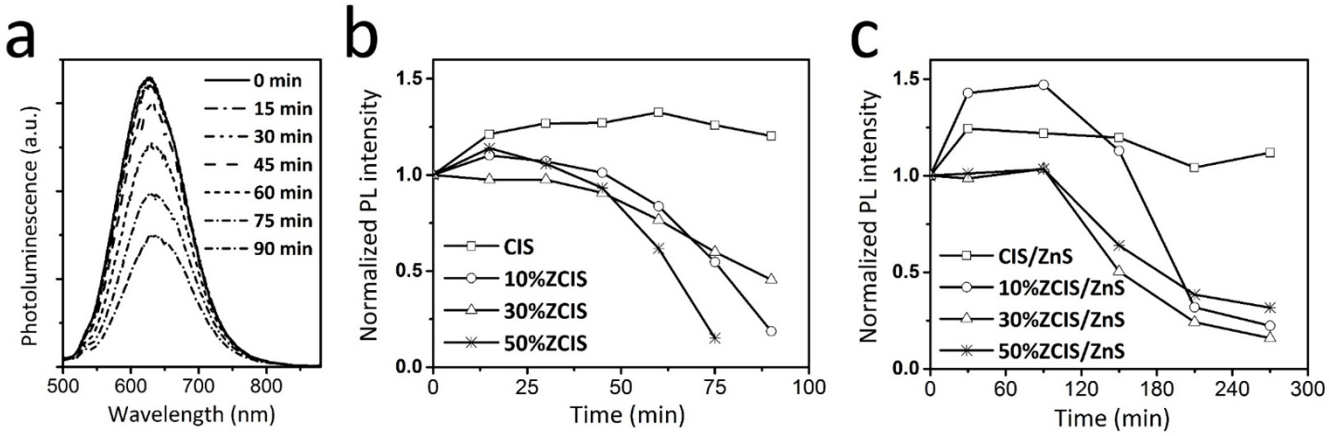

Figure S6. Photostability studies of ZCIS and ZCIS/ZnS QDs. (a) Temporal evolution of photoluminescence spectra of 30% ZCIS QDs under UV irradiation. (b) and (c) PL maximum change of ZCIS and ZCIS/ZnS QDs during different UV irradiation times.