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Supplementary Information

The Structure-Dependent Quantum Yield of $Zn_xCd_{1-x}S$ Nanocrystals

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Table S1. The XRD results of Znx NCs.

NCs	Index	2θ (°)	Δ2θ(°)	D (nm)	d (Å)	ε (%)
	CdS (111)	26.80	4.87	1.68	3.32	-1.54
Zn0.2	CdS (220)	43.90	4.84	1.77	2.06	
	CdS (311)	52.56	3.53	2.51	1.74	
	CdS (111)	27.25	4.12	1.98	3.27	-3.08
Zn0.3	CdS (220)	44.54	3.18	2.70	2.03	
	CdS (311)	52.94	4.10	2.16	1.73	
	CdS (111)	27.42	4.24	1.93	3.25	-3.60
Zn0.4	CdS (220)	45.00	4.82	1.78	2.01	
	CdS (311)	53.68	4.10	2.17	1.71	
	CdS (111)	27.14	3.34	2.45	3.28	-2.74
Zn0.5	CdS (220)	45.10	3.17	2.71	2.01	
	CdS (311)	53.00	3.03	2.93	1.73	

Table S2. HRTEM results of Zn_x NCs

NCs	Index	*d* (Å)	*a* (Å)	Particle Size (nm)
Zn0.2	CdS{111}/ZnS{111}	3.36	5.82	3.6±0.4
Zn0.3		3.29	5.70	3.1±0.4
Zn0.4		3.15	5.46	3.1±0.3
Zn0.5		3.32	5.75	2.7±0.4

Table S3. XAS fitting results of Znx NCs in Zn and Cd K-edges.

Zn K-edge

Sample	Path	CN[a]	R[b] (Å)	$\sigma^2(\times10^{-3})$[c] ($Å^2$)	ΔE_0[d] (eV)
ZnO	Zn-O	4.8	1.99	0.006	-0.2
	Zn-Zn	9.6	3.21		
Zn0.2	Zn-O	2.1	1.95	0.003	-0.9
	Zn-S	0.4	2.29		
	Zn-Zn	0.3	3.08		
Zn0.3	Zn-O	2.3	1.96	0.003	-0.9
	Zn-S	0.3	2.33		
	Zn-Zn	0.3	3.18		
Zn0.4	Zn-O	2.6	1.97	0.003	3.0
	Zn-S	0.2	2.33		
	Zn-Zn	0.3	3.09		
Zn0.5	Zn-O	2.8	1.97	0.003	3.6
	Zn-S	0.2	2.42		
	Zn-Zn	1.4	3.20		

Cd K-edge

Sample	Path	CN[a]	R[b] (Å)	$\sigma^2(\times10^{-3})$[c] ($Å^2$)	ΔE_0[d] (eV)
CdO	Cd-O	4.4	2.28	0.008	1.7
	Cd-Cd	7.1	3.33		
CdS	Cd-O	1.1	2.20	0.003	2.5
	Cd-S	2.2	2.50		
	Cd-Cd	0.1	3.55		
Zn0.2	Cd-O	0.9	2.16	0.003	2.9
	Cd-S	2.0	2.46		
	Cd-Cd	0.2	3.55		
Zn0.3	Cd-O	0.8	2.13	0.003	0.7
	Cd-S	2.3	2.50		
	Cd-Cd	0.2	3.55		
Zn0.4	Cd-O	0.6	2.21	0.003	3.7
	Cd-S	2.1	2.52		
	Cd-Cd	0.6	3.55		

	Cd-O	1.2	2.21		
Zn0.5	Cd-S	2.1	2.51	0.003	2.5
	Cd-Cd	0.2	3.56		

[a] CN: coordination number, [b] R: bond distance, [c] σ^2: Debye-Waller factor, [d] ΔE_0: inner potential correction.

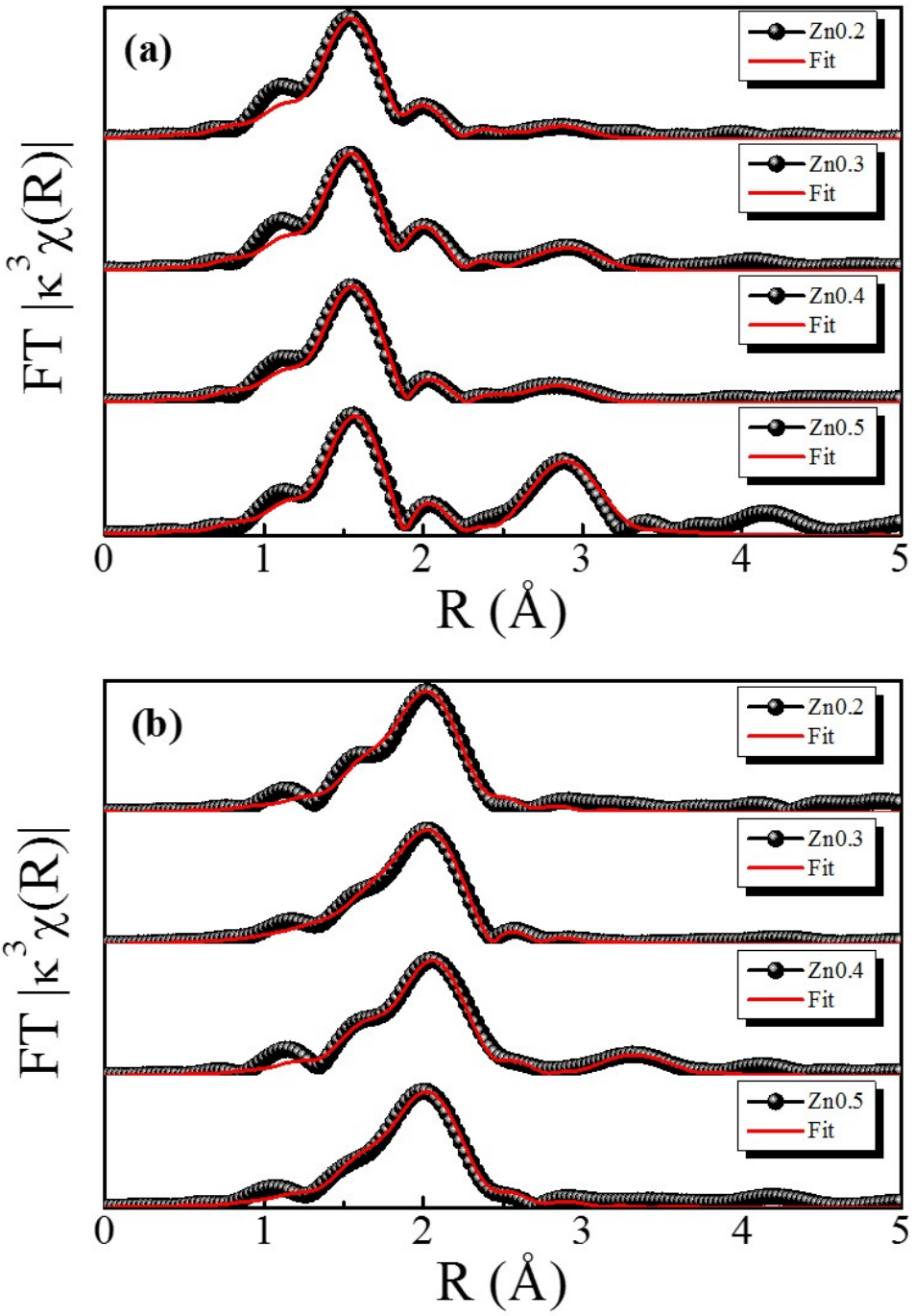

Figure S1 Fourier transformed EXAFS spectra with the fitting curves for Znx NCs in (a)Zn and (b)Cd K-edge.