Supporting Information for

**Synthesis of Quantum-sized Cubic ZnS Nanorods
by the Oriented Attachment Mechanism**

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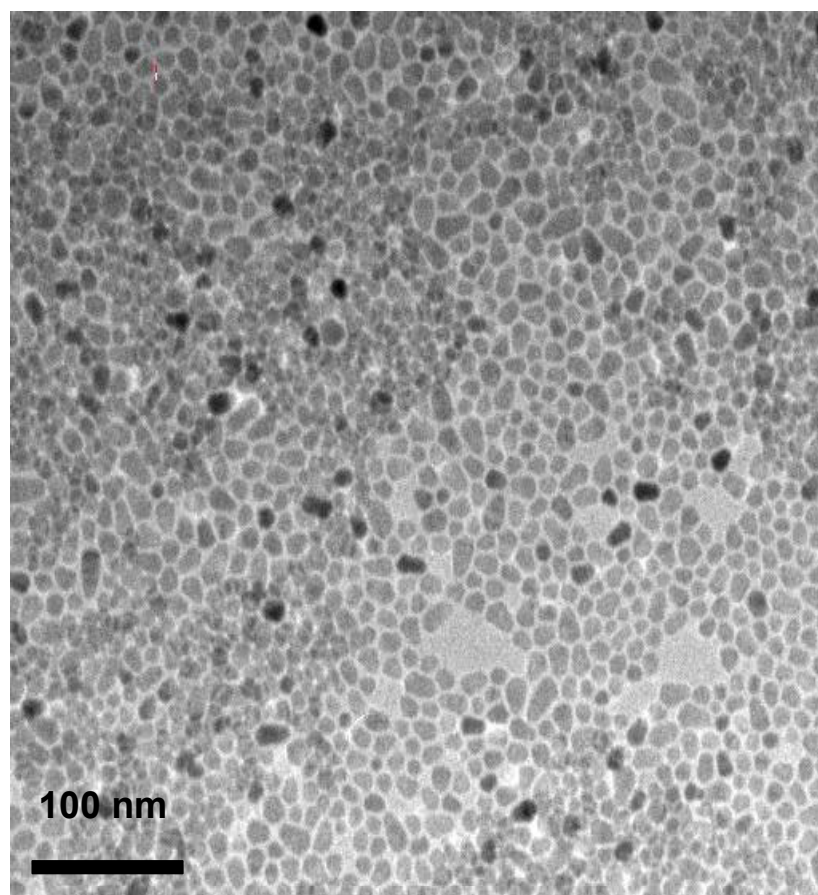
Figure S1. TEM image of ZnS nanocrystals synthesized by adding 0.15 g of TOPO in
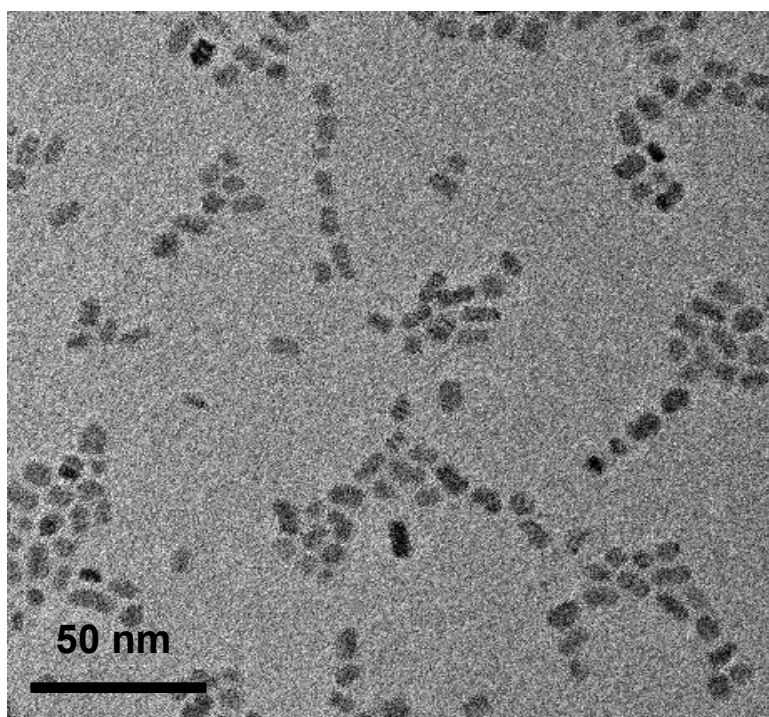
the reaction mixture.

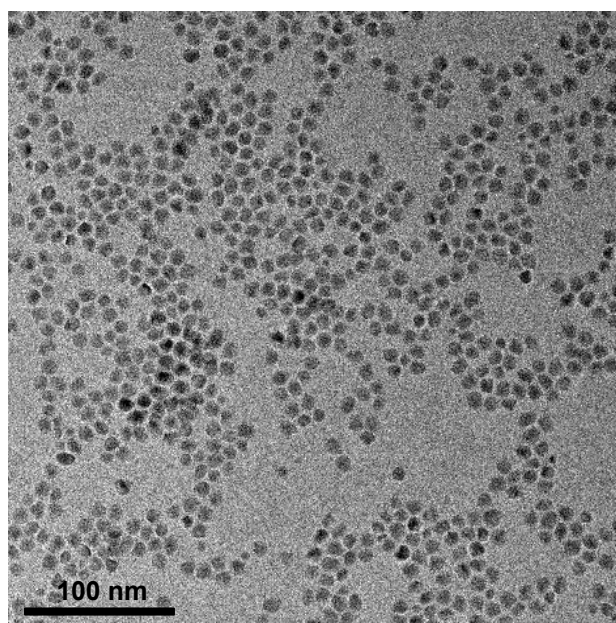**Figure S2.** ZnS nanocrystals after the secondary aging in oleylamine at 300 $^{\circ}$C.

Figure S3. 10 nm quasi-spherical ZnS nanocrystals after one cycle of size selection process.
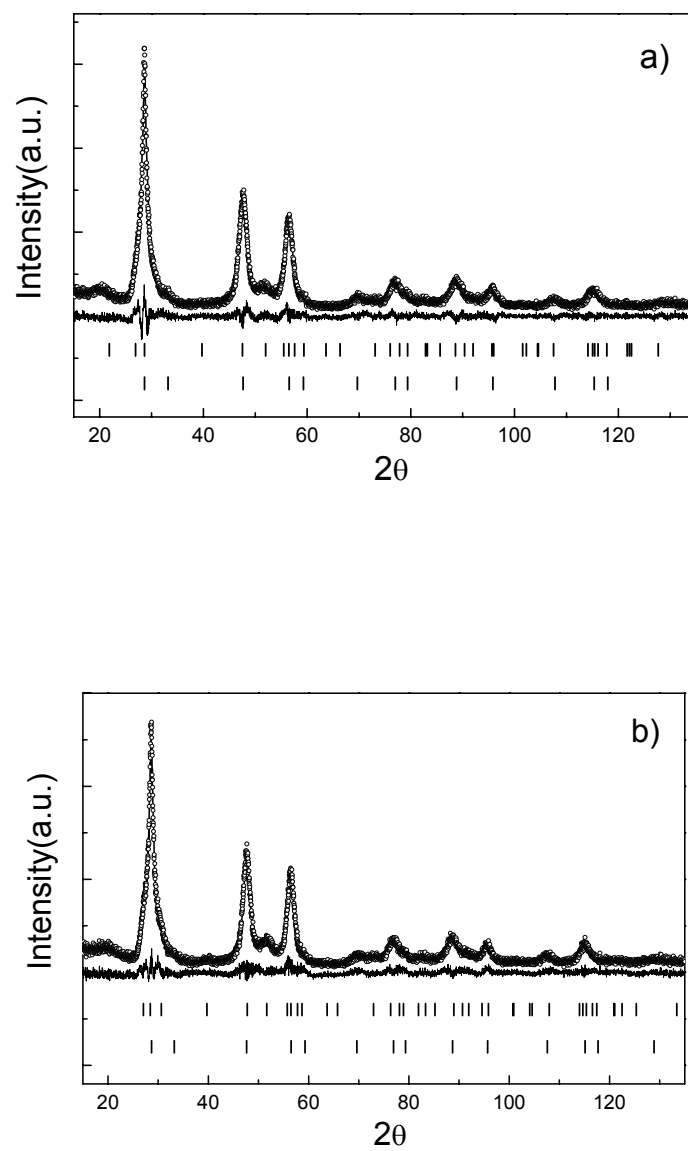
Figure S4. Observed, calculated, and difference profiles for the ZnS nanorods and 5 nm quasi-spherical ZnS nanocrystals using a Rietveld refinement.
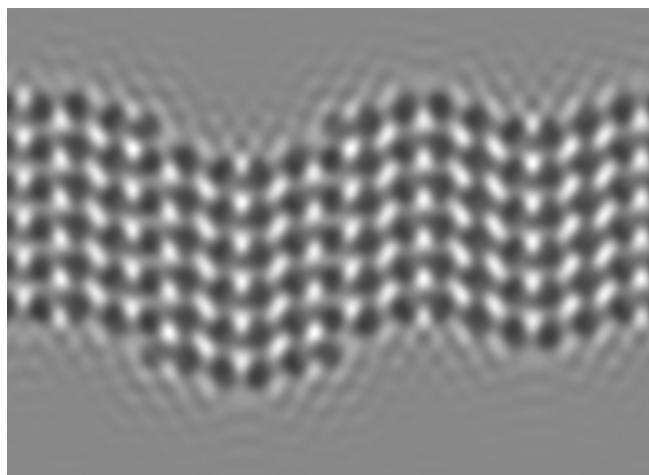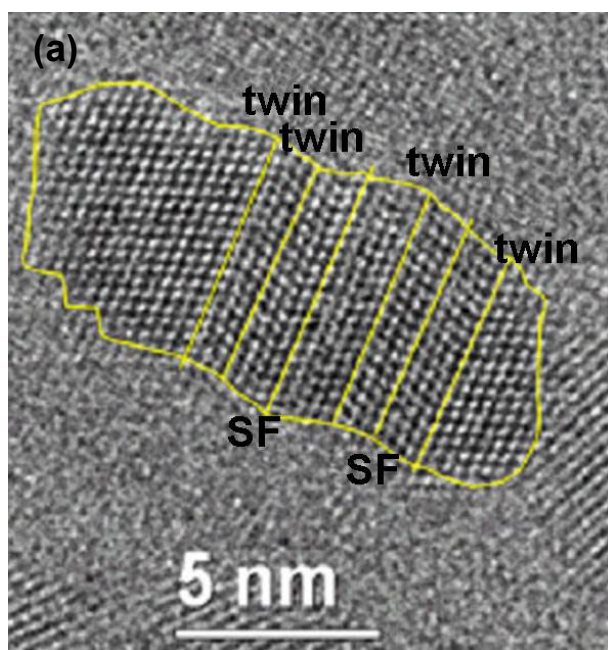
Figure S5. HRTEM image (a) and the corresponding simulated image (b) of a single

ZnS nanorod. "Twin" means twinning defects, "SF" means stacking faults.

Table S1. Results of the crystal structure refinement data for ZnS nanocrystals refined

by Rietveld method.

	Nano rod		5 nm ZnS	
	Spherite	Zinc Blende	Spherite	Zinc Blende
2θ range(^{o})	20 ~ 135		20~ 135	
Number of data	5,001		5,001	
Refined parameters	16		16	
Wavelength(Å)	1.5425		1.5425	
R_p	9.02		10.05	
R_{wp}	11.6		14.1	
χ^2(Goodness of fit)	1.72		2.08	
Space group	F-43m	P6$_3$mc	F-43m	P6$_3$mc
Reflections collected	14	39	14	39
a(Å)	5.394(1)	3.820(1)	5.403(1)	3.817(2)
c(Å)		6.289(2)		6.297(3)
Volume (Å^3)	156.94(5)	79.10(4)	158.18(4)	79.40(10)
Z	4	2	4	2
B(S) (Å^2)	2.11	4.89	2.44	2.80
B(Zn) (Å^2)	5.45	2.22	6.45	2.33
Weight %	17.9	82.1	21.0	79.0

χ^2 (Goodness of fit) $=(R_{wp}/R_e)^2$

$$R_p = \frac{\sum |y_i(obs) - y_i(calc)|}{\sum y_i(obs)} \qquad R_{wp} = \left\{ \frac{\sum w_i(y_i(obs) - y_i(calc))^2}{\sum w_i(y_i(obs))^2} \right\}^{1/2}$$

$y_i(obs)$ and $y_i(calc)$ are the observed and calculated intensities at the ith step respectively,

w_i is the weight factor.