Supplementary Materials:

Size, Shape-Dependent Growth of Fluorescent ZnS Nanorods and Nanowires by Ag Nanocrystals as Seeds

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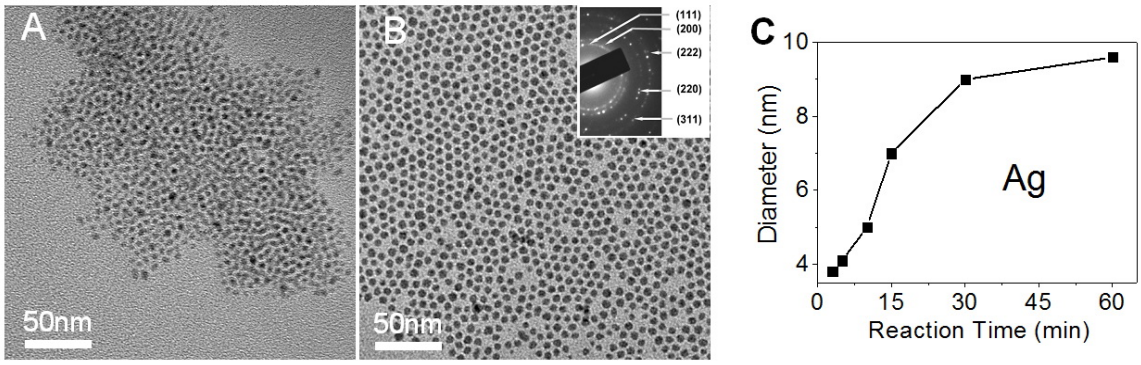

Figure S1. TEM images of Ag nanocrystals synthesized using Agacac as precursor with (A) a diameter of 5 nm; (B) a diameter of 7 nm and SAED pattern (inset) acquired from (B). (C) Sizing curves for Ag nanocrystals with different reaction time.

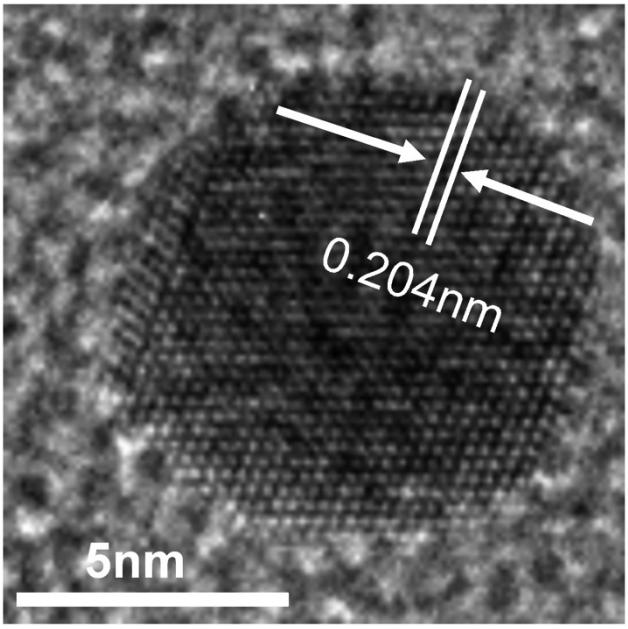

Figure S2. High-resolution TEM image of a 9 nm Ag nanocrystal. HRTEM image reveals the highly crystalline nature with an interplanar spacing of 0.204 nm, which corresponding to (200) planes of fcc structured Ag NCs.

Table S1. Measured lattice spacing d (Å), based on the rings in Figure S1B (inset) and standard atomic spacing for Ag along with their respective hkl indexes from the PCPDFWIN database.

	Ring				
	1	2	3	4	5
d/(Å)	2.37	2.05	1.46	1.24	1.17
Ag/(Å)	2.36	2.04	1.45	1.23	1.18
hkl	111	200	220	311	222

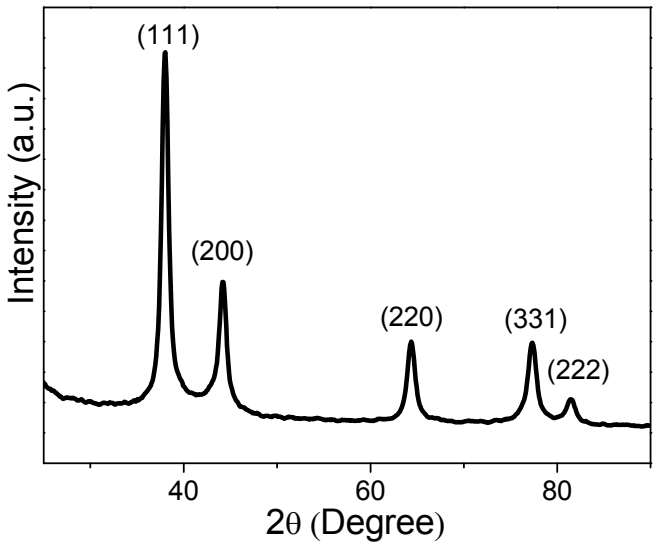

Figure S3. X-ray diffraction pattern of 9 nm Ag nanocrystals. From XRD pattern, the peaks at 38.1°, 44.3°, 64.4°, 77.5°, and 81.5° correspond to the (111), (200), (220), (311), and (222) reflections of fcc structured Ag, which is in accordance with the result of SAED pattern.

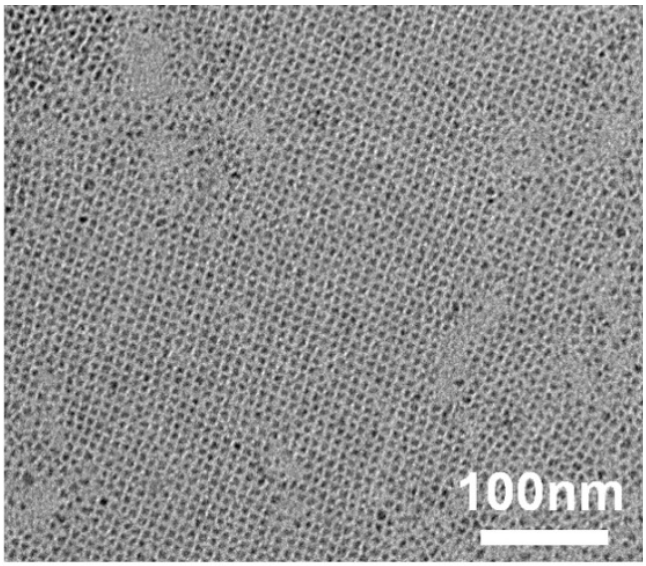

Figure S4. TEM images of 5 nm ZnS nanocrystals which synthesized without the participation of Ag nanocrystals.

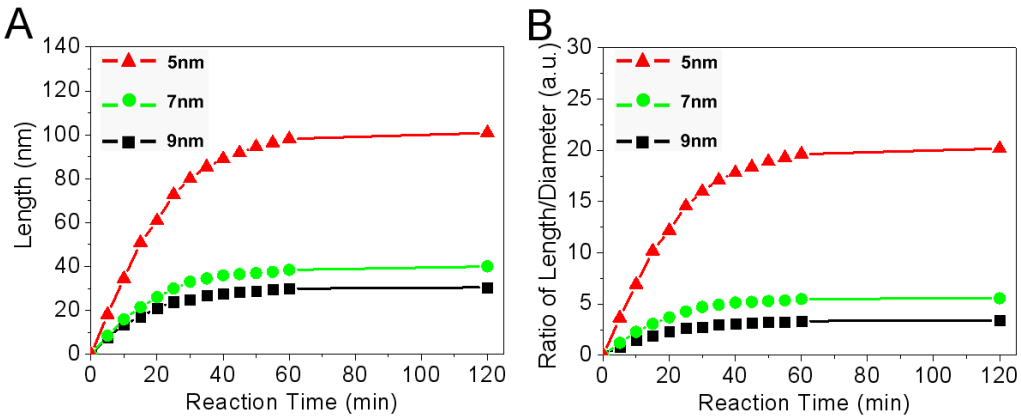

Figure S5. The relationships of the average lengths (A) and the length/diameter ratios (B) of Ag-ZnS nanorods as function of reaction time with the different seed size of Ag nanocrystals. Note: 0.8 mmol Zn precursor was used for every single reaction.

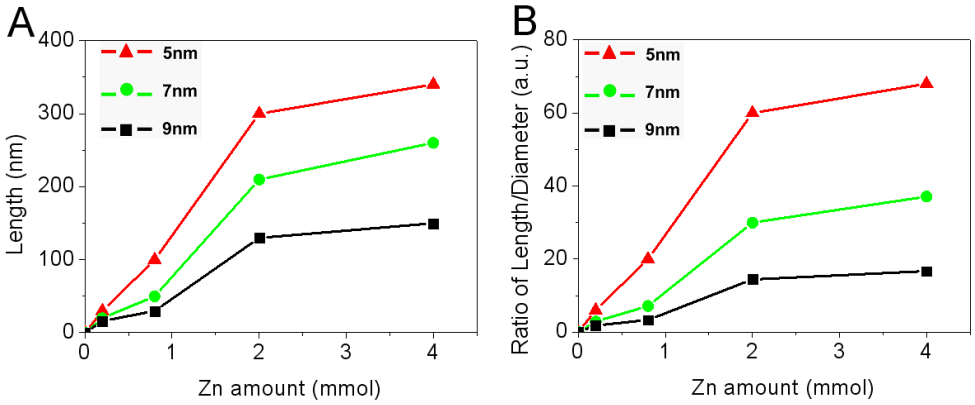

Figure S6. The average lengths (A) and the length/diameter ratios (B) of Ag-ZnS nanorods or nanowires as a function of amount of Zn precursor used during the reaction..

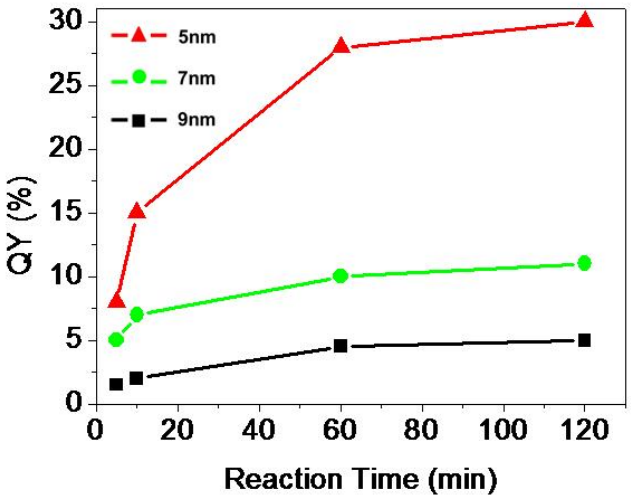

Figure S7. Quantum yields of Ag-ZnS nanorods synthesized using different diameters of Ag nanocrystals with different reaction times. 0.8 mmol Zn precursor was used for every single reaction.

Table S2. Time constants τ_1 and τ_2, components A_1 (corresponding to τ_1) and A_2 (corresponding to τ_2), and average lifetime τ of Ag-ZnS nanorods.

Ag-ZnS	τ_1/ns	A_1/%	τ_2/ns	A_2/%	τ
10min	1.433	85.02	3.211	14.98	1.699
2h	1.504	85.14	5.502	14.86	2.098