Supporting Information

Pressure Induced Photoluminescence Modulation in a Wide Range and Synthesis of Monodispersed Ternary AgCuS Nanocrystal Based on Ag_2S Nanocrystals

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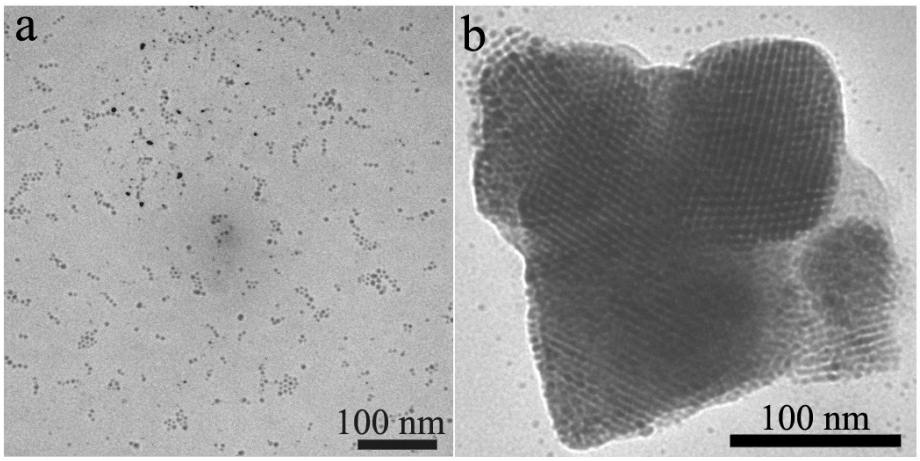


Figure S1. (a) A typical TEM image of monodisperse and disordered ~4.5 nm Ag_2S NCs which were obtained *via* a quick quenching process. (b) TEM image of well-order ~4.5 nm Ag_2S NCs which were obtained *via* a natural cooling process.

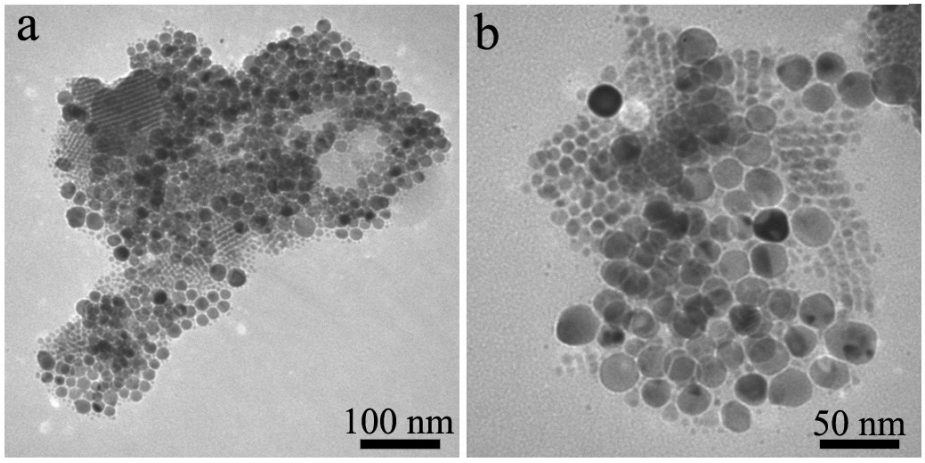


Figure S2. (a, b) TEM images of polydisperse Ag_2S NCs under different magnifications. These Ag_2S NCs were synthesized at 280 ^oC for 10 min.

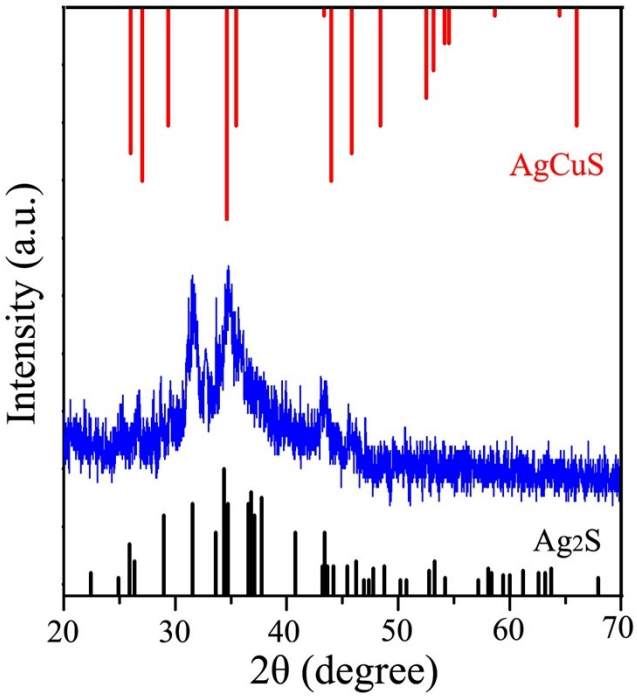


Figure S3. XRD pattern of the product synthesized at 210 °C for 1h after injecting $CuCl_2$-OLA solution.

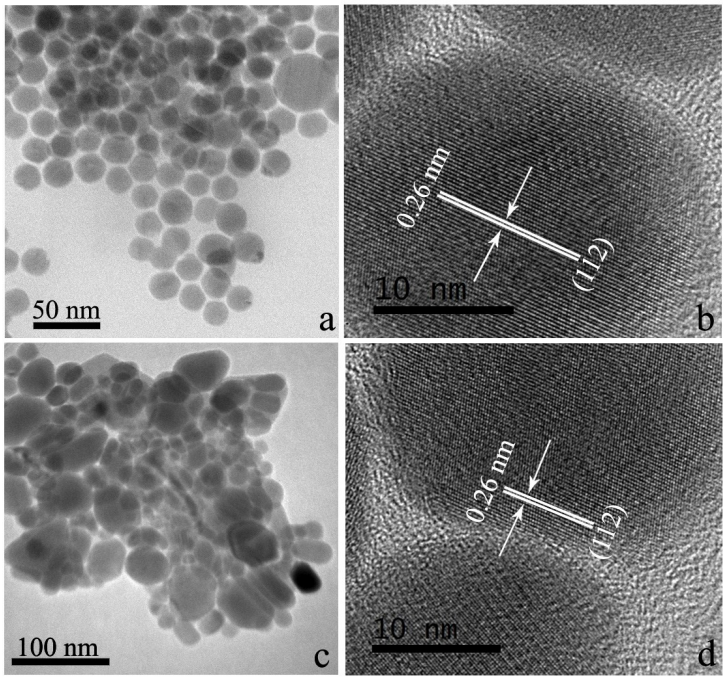


Figure S4. TEM and HRTEM images of polydisperse AgCuS NCs synthesized at 280 °C with different reaction time. (a, b) 10 min; (c, d) 20 min.

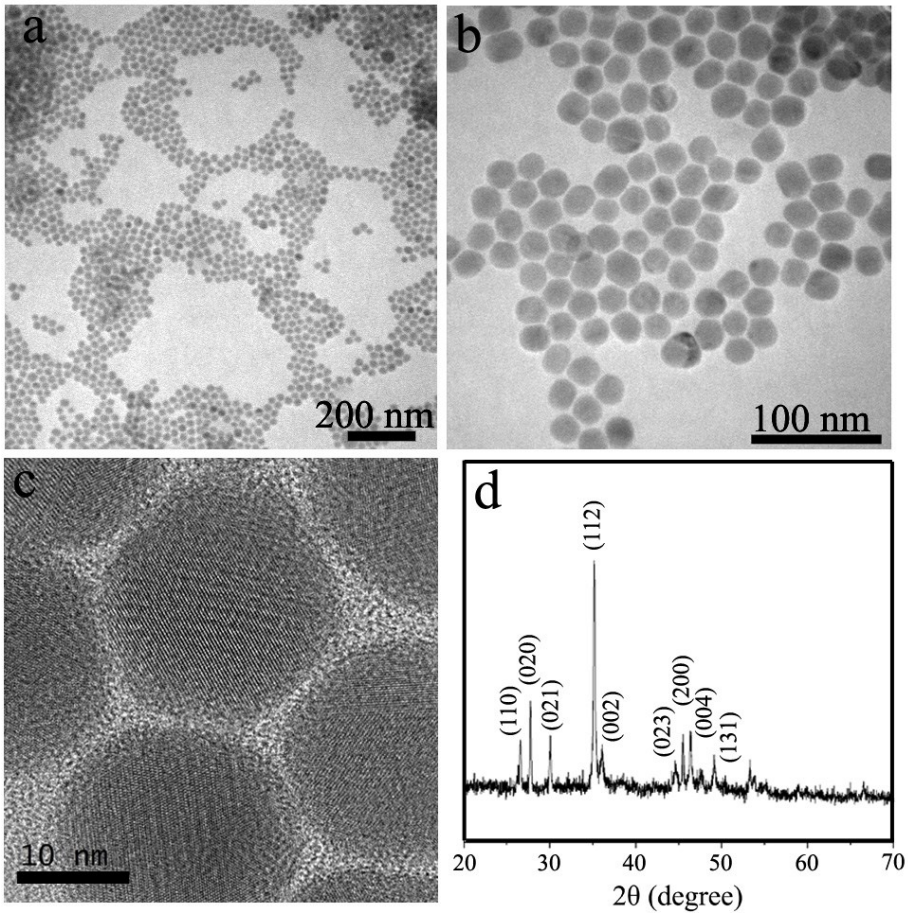
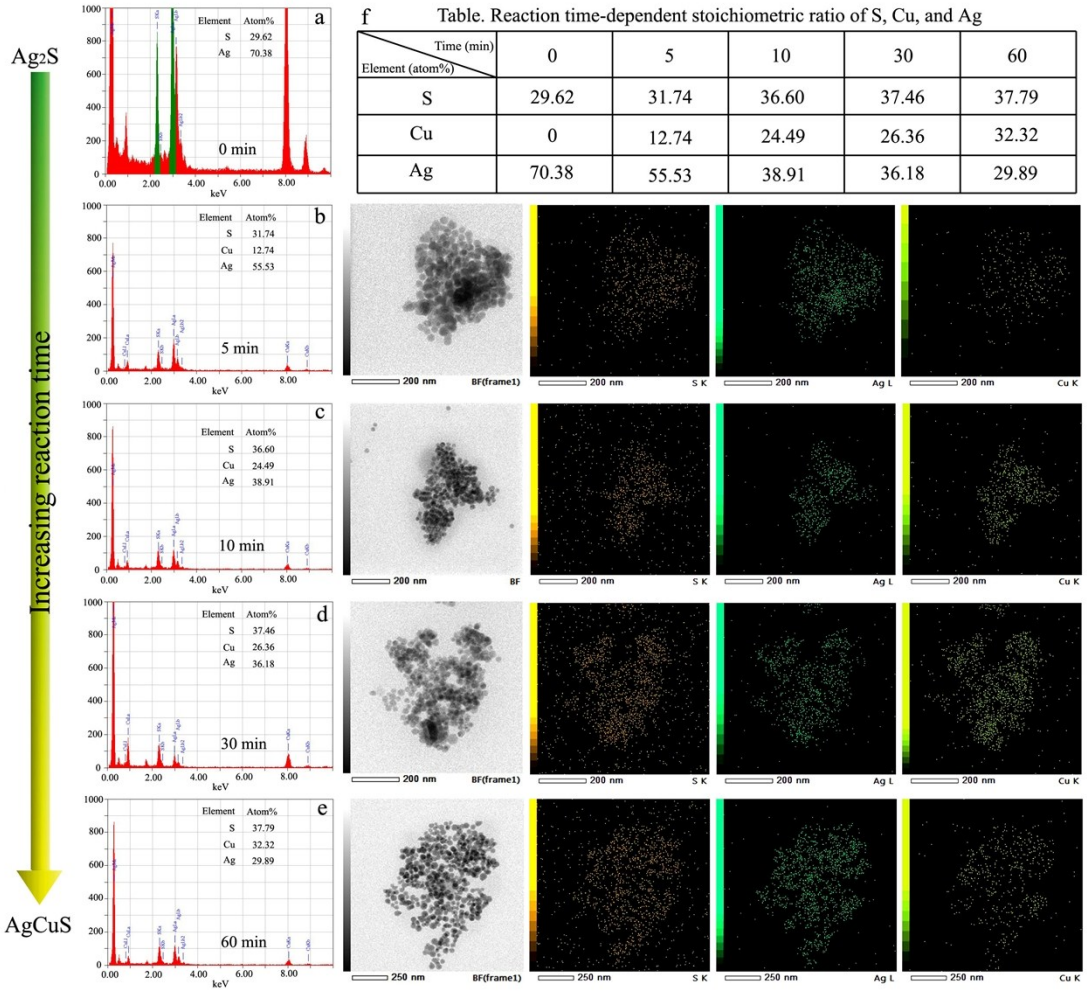


Figure S5. (a,b) TEM images of AgCuS NCs synthesized with different ratio of precursor (Ag:Cu:S=1:2:4). (c) Corresponding HRTEM image. (d) Corresponding XRD pattern.



f Table. Reaction time-dependent stoichiometric ratio of S, Cu, and Ag

Element (atom%) \ Time (min)	0	5	10	30	60
S	29.62	31.74	36.60	37.46	37.79
Cu	0	12.74	24.49	26.36	32.32
Ag	70.38	55.53	38.91	36.18	29.89

Figure S6. Reaction time-dependent stoichiometric ratio between S, Ag, and Cu monitored by EDX and elemental distribution maps. (a) Original Ag_2S NCs; (b) 5min; (c) 10 min; (d) 30 min; (e) 60 min; (f) Corresponding table of stoichiometric ratio.

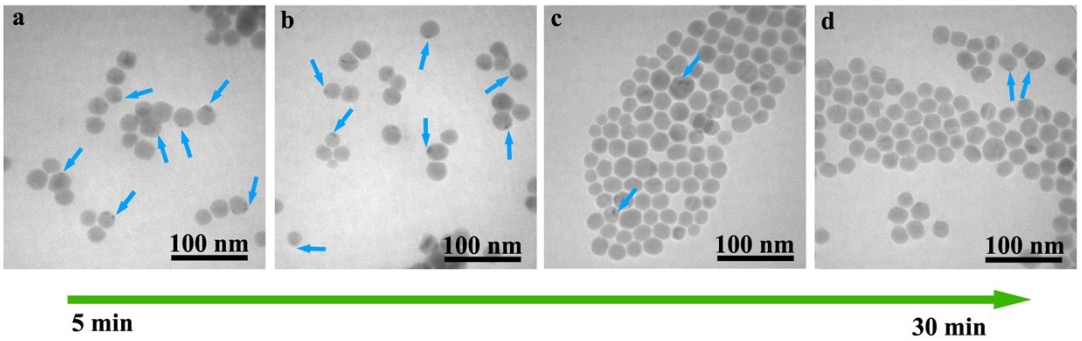


Figure S7. TEM images of AgCuS NCs synthesized at different reaction time. The arrows in panels show the possible coexisting Ag clusters embedded in the interior of AgCuS NCs, indicating a marked decrease process of Ag clusters with increasing reaction time.

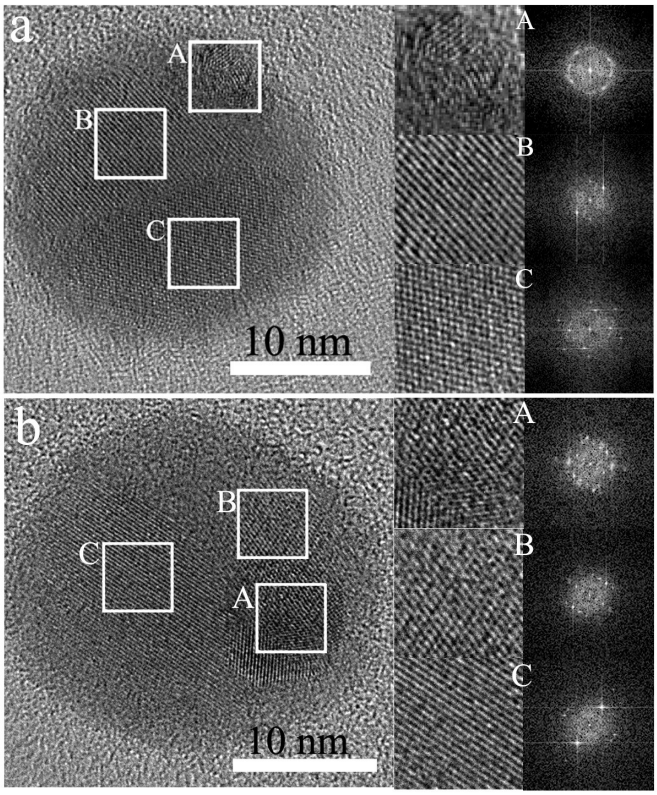


Figure S8. HRTEM images of individual hybrid NCs with the corresponding FFT patterns. The letters A, B, and C represent Ag, Ag_2S, and AgCuS, respectively.

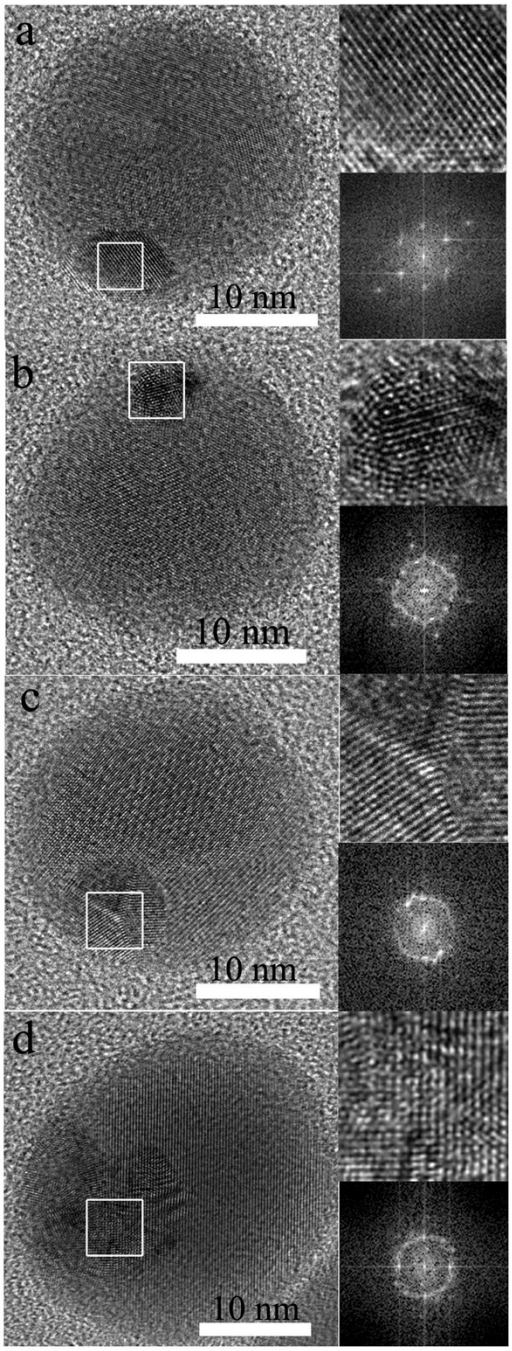


Figure S9. Typical HRTEM and FFT images of formed Ag NCs in Ag-Ag_2S-AgCuS and Ag-AgCuS heterostructures.

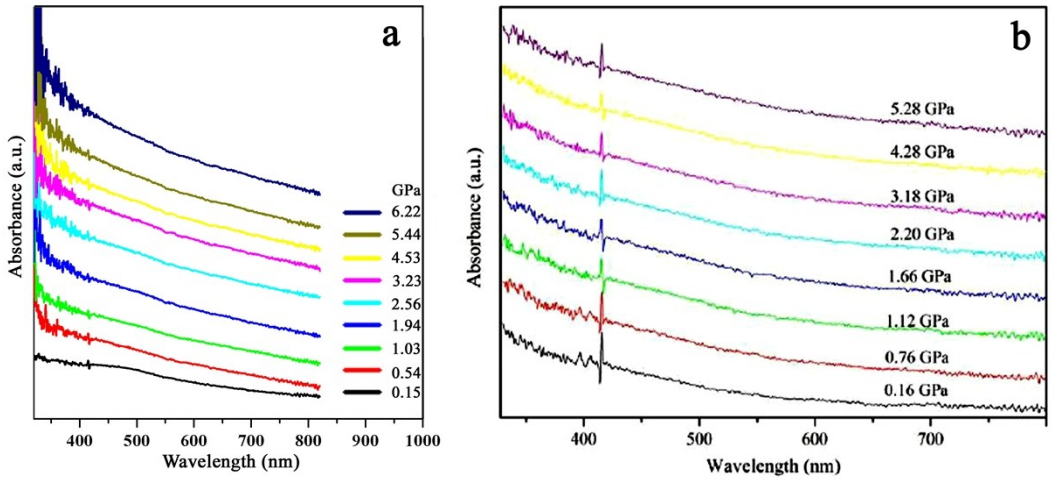


Figure S10. Pressure-dependent absorption spectra of 6.0 nm Ag_2S NCs.

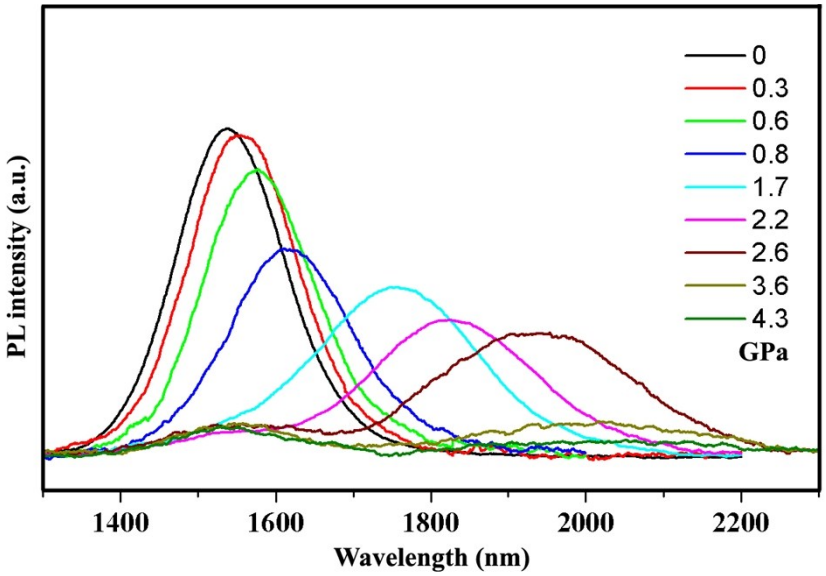


Figure S11. Pressure-dependent PL spectra of ~5.0 nm PbSe NCs.