

Electronic Supplementary information

Synthesis and Self-assembly of $\text{Cu}_{1.94}\text{S}$ -ZnS Heterostructured Nanorods

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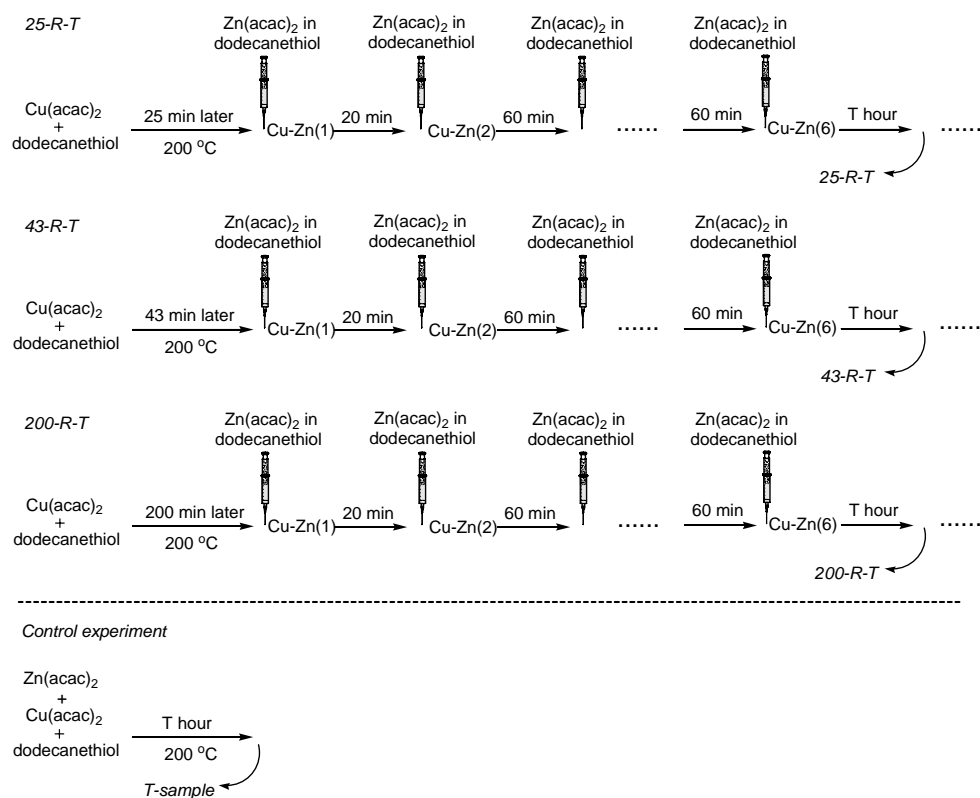
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Synthetic procedures for $\text{Cu}_{1.94}\text{S}$ -ZnS nanorods. Scheme S1 shows the detailed synthetic procedures for *F-R-T* series of $\text{Cu}_{1.94}\text{S}$ -ZnS nanorods prepared by introducing $\text{Zn}(\text{acac})_2$ -dodecanethiol solution into reaction systems containing differently sized $\text{Cu}_{1.94}\text{S}$ nanocrystals, as well as the control experiment performed by simultaneously pyrolyzing $\text{Cu}(\text{acac})_2$ and $\text{Zn}(\text{acac})_2$ in dodecanethiol.

Identification of the crystalline phases by SAED. The crystalline phase of copper sulfide and copper zinc sulfide nanocrystals were determined by selected SAED apart from X-ray diffraction method. Detailed results are provided in Figure S1.

Atomic arrangements crossing the $\text{Cu}_{1.94}\text{S}/\text{ZnS}$ interface. According to the high resolution TEM results shown in Figures 1f-g, a schematic model for illustrating the atomic arrangements crossing the $\text{Cu}_{1.94}\text{S}$ -ZnS interface is given in Figure S2.



Scheme S1. Synthetic procedures for 25-R-T, 43-R-T, 200-R-T, and control experiment, respectively.

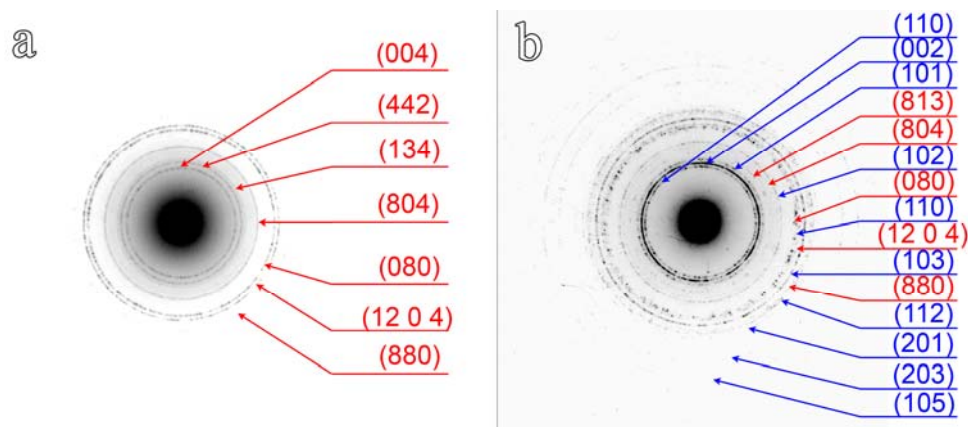


Figure S1. SAED patterns of copper sulfide nanoparticles obtained after pyrolyzing $\text{Cu}(\text{acac})_2$ in dodecanethiol at $200\text{ }^\circ\text{C}$ for 25 min (a), and sample 25-1-17 (b), together with the identification of diffraction rings labeled with the Miller indices of monoclinic $\text{Cu}_{1.94}\text{S}$ (red, JCPDS No.23-0959) and wurtzite ZnS (blue, JCPDS No. 79-2204).

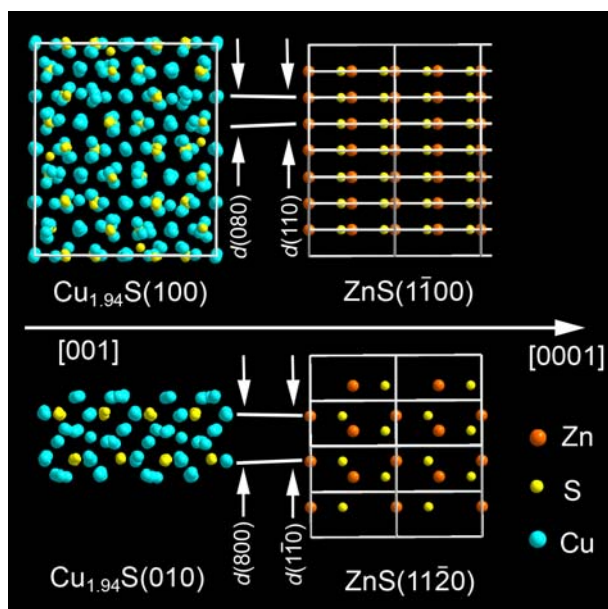


Figure S2. Schematic model for the atomic arrangements at the $\text{Cu}_{1.94}\text{S}$ - ZnS interface.