

Supplementary Information For
**Facile synthesis of AgInS₂ hierarchical flowerlike
nanoarchitectures composed of ultrathin nanowires**

Zhongping Liu, Kaibin Tang*, Dake Wang, Linlin Wang, and Qiaoyan Hao

*Division of Nanomaterials and Chemistry, Hefei National Laboratory for Physical Sciences at the
Microscale; Department of Chemistry, University of Science and Technology of China, Hefei,
230026, P.R. China. E-mail: kbtang@ustc.edu.cn; Fax: +86-551-3607402; Tel: +
86-551-3601791*

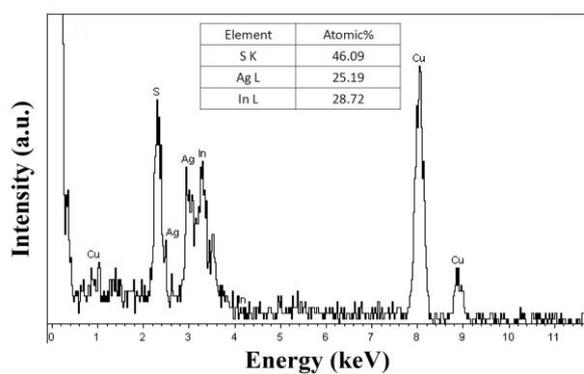


Fig. S1 EDS pattern for a typical sample.

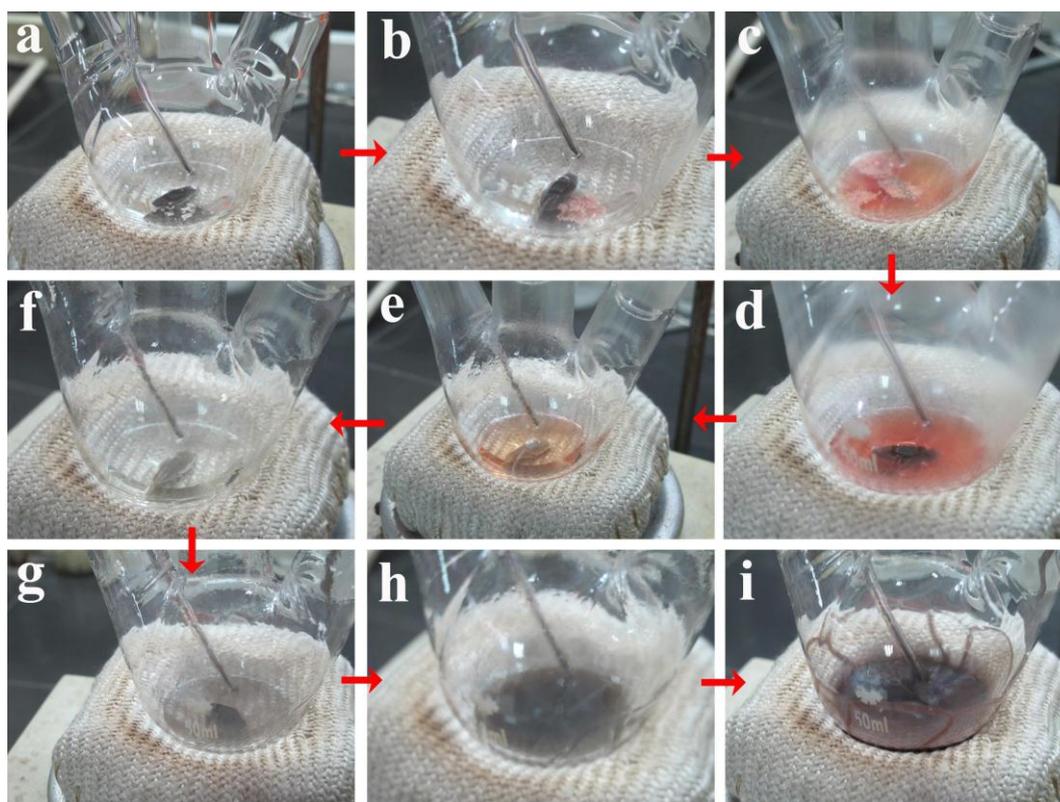


Fig. S2 Photography of the reaction solution in the heating course. (a) Room temperature, (b) 50 °C, (c) 75 °C, (d) 90 °C, (e) 120 °C, (f) 145 °C, (g) 210 °C, (h) 220 °C, (i) 250 °C.

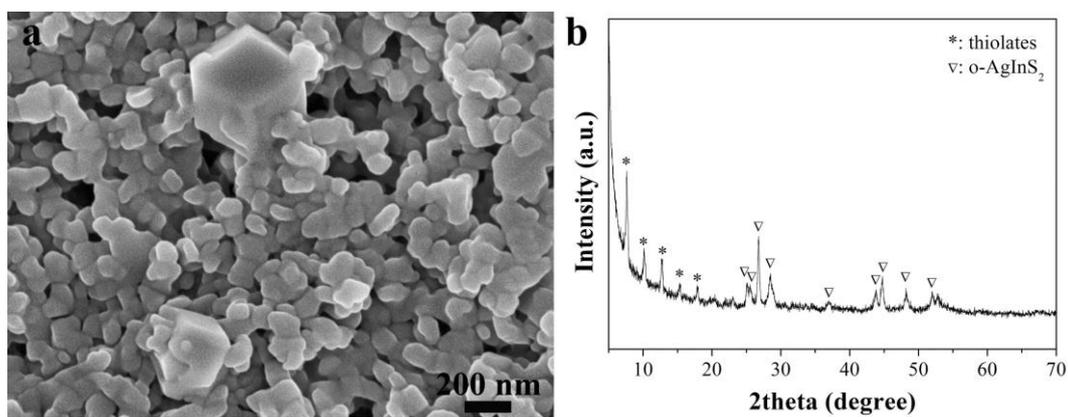


Fig. S3 (a) SEM image and (b) XRD pattern of the product obtained when the reaction mixture was heated to 220 °C. In the SEM image, several polyhedrons can be found. We speculated that these polyhedrons were AgInS_2 crystals and that the plate-like crystals were metal thiolates. In fact, the plate-like crystals were also obtained by adding ethanol into the colorless reaction solution before the colorless-to-dark gray transition. The XRD pattern of the product further shows that the product contains thiolates and orthorhombic AgInS_2 .

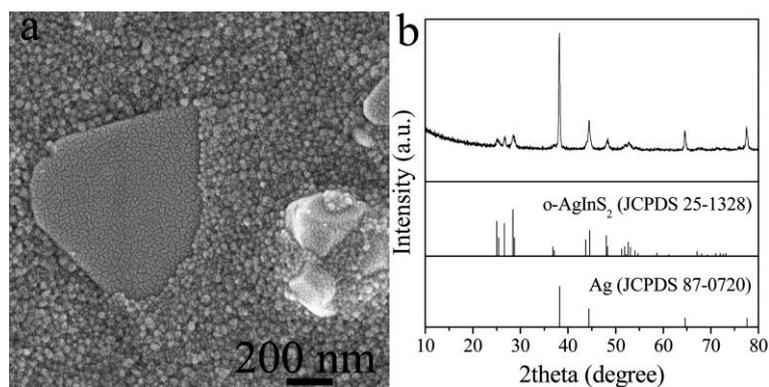


Fig. S4 SEM image (a) and XRD pattern (b) of the product synthesized by introducing 1 mL oleylamine into the reaction system while kept the volume of reaction solution at 5 mL.

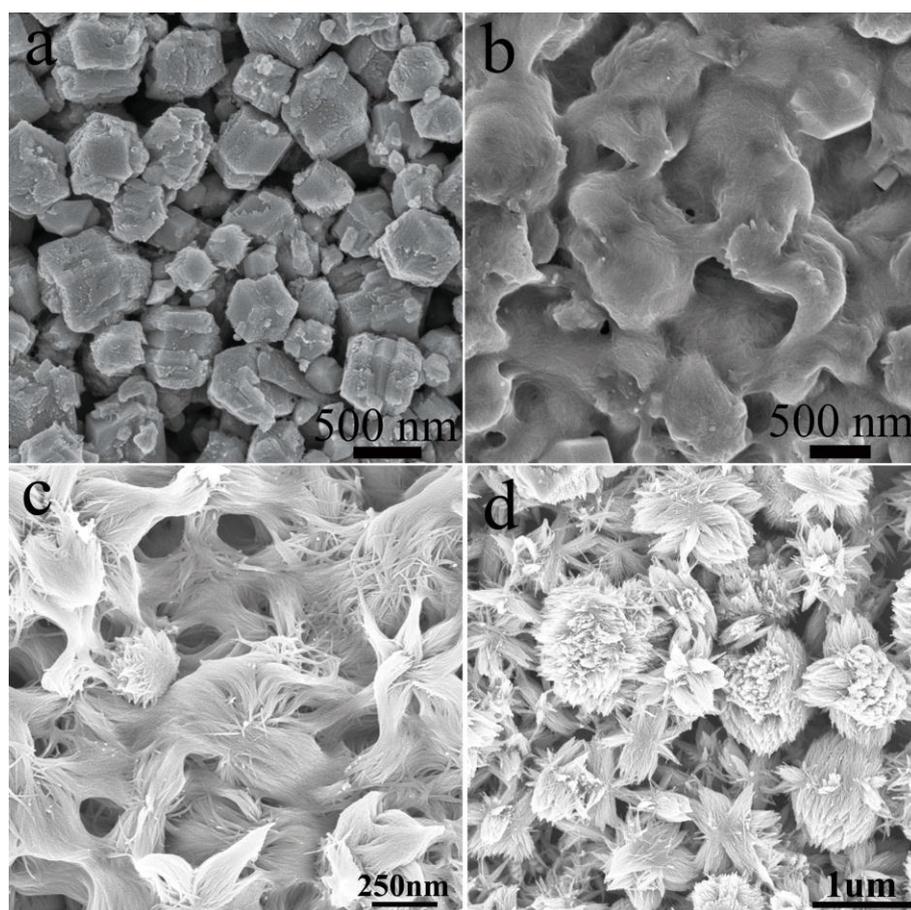


Fig. S5 SEM images of products synthesized after reacting for 60 min at different reaction temperature: (a) 190 °C, (b, c) 210 °C, (d, e) 230 °C, (f) 270 °C.

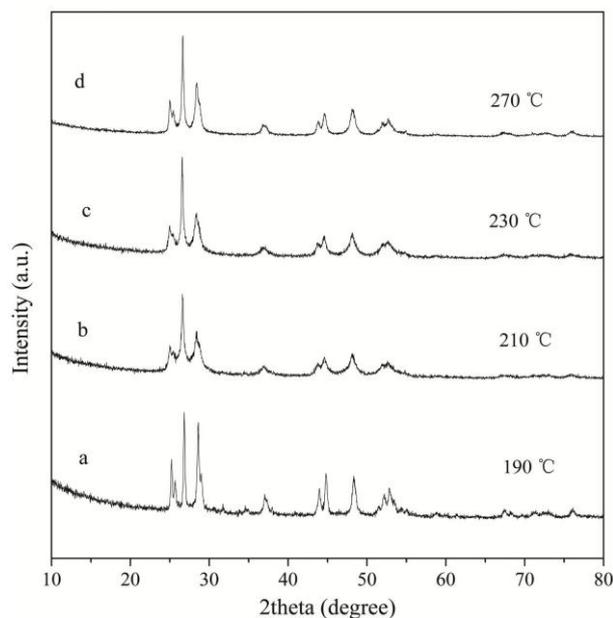


Fig. S6 XRD patterns of products synthesized after reacting for 60 min at different reaction temperature: (a) 190 °C, (b) 210 °C, (c) 230 °C, (d) 270 °C.

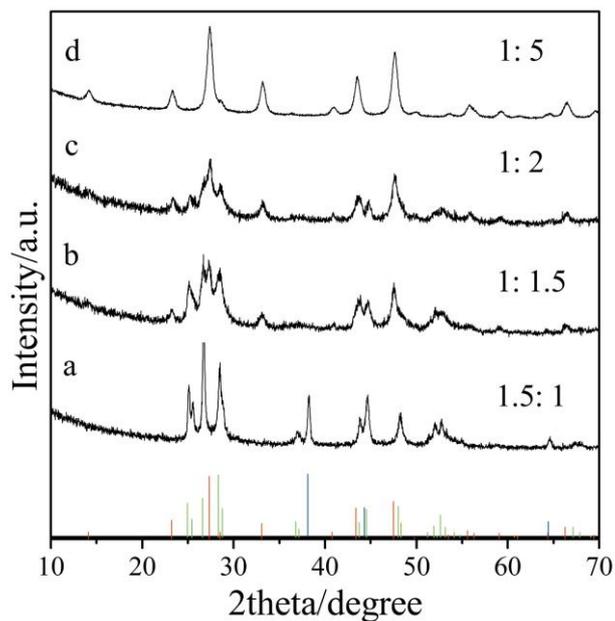


Fig. S7 XRD patterns of products synthesized at the different molar ratios of AgNO₃ and InCl₃ while other reaction parameters were kept the same with the typical synthesis: (a) 1.5: 1; (b) 1: 1.5; (c) 1: 2; (d) 1: 5. The bottom lines are the standard reference patterns of orthorhombic AgInS₂ (green line, JCPDS 25-1328), cubic AgIn₅S₈ (red line, JCPDS 25-1329) and Ag (blue line, JCPDS 65-2871).