

Supporting Information

A trialkylphosphine-driven chemical transformation route to Ag and Bi based chalcogenides

Shi-Kui Han,^{†, §} Chao Gu,^{†, §} Ming Gong,[‡] and Shu-Hong Yu^{†*}

[†] Division of Nanomaterials and Chemistry, Hefei National Laboratory for Physical Sciences at Microscale, Collaborative Innovation Center of Suzhou Nano Science and Technology, Department of Chemistry, University of Science and Technology of China, Hefei, Anhui 230026, P. R. China.

[‡] Lab of Mechanical and Material Science, School of Engineering Science, University of Science and Technology of China, Hefei 230026, P. R. China

[§] The authors contributed equally.

* Corresponding Author.

Email: shyu@ustc.edu.cn

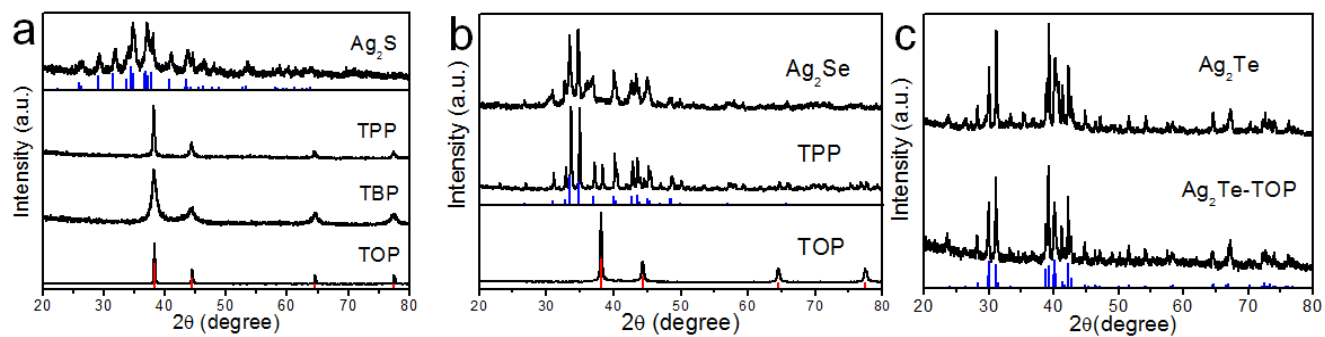


Figure S1. (a) XRD patterns of Ag_2S , (b) Ag_2Se , (c) Ag_2Te based transformation reactions with different reductants of TPP, TBP, and TOP.

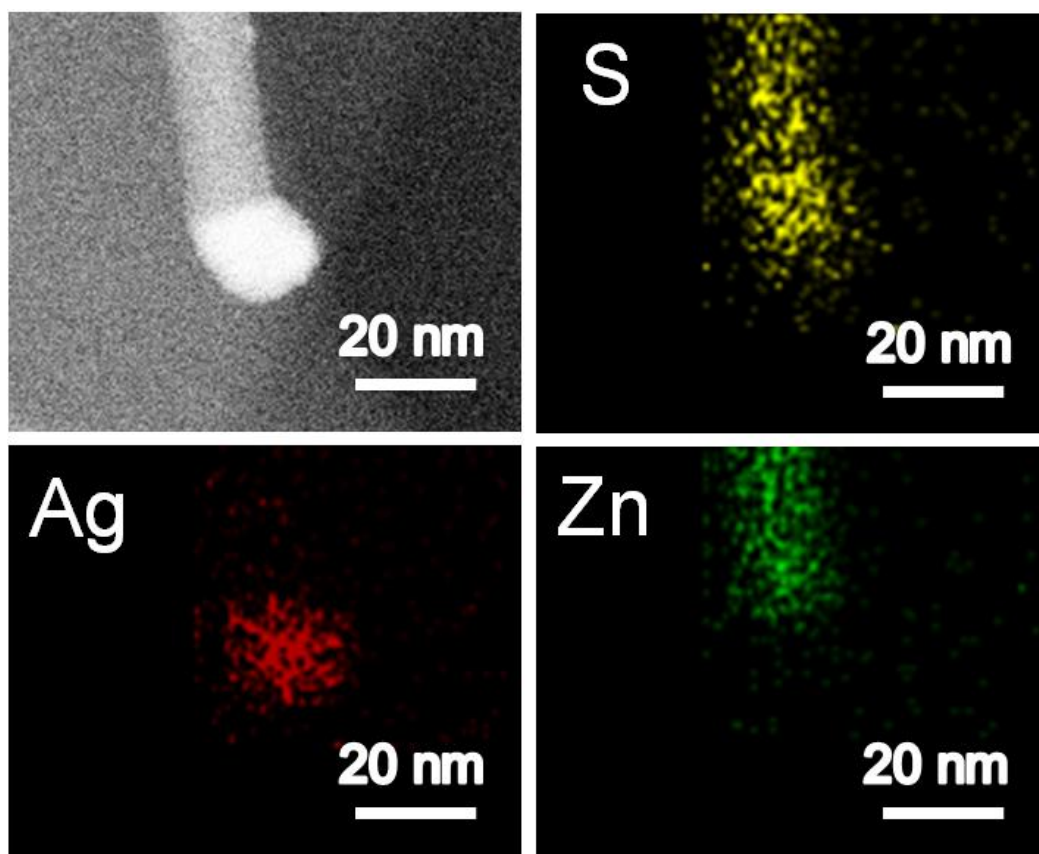


Figure S2. STEM-EDS elemental mapping images of the as-obtained Ag_2S -ZnS heteronanocrystals.

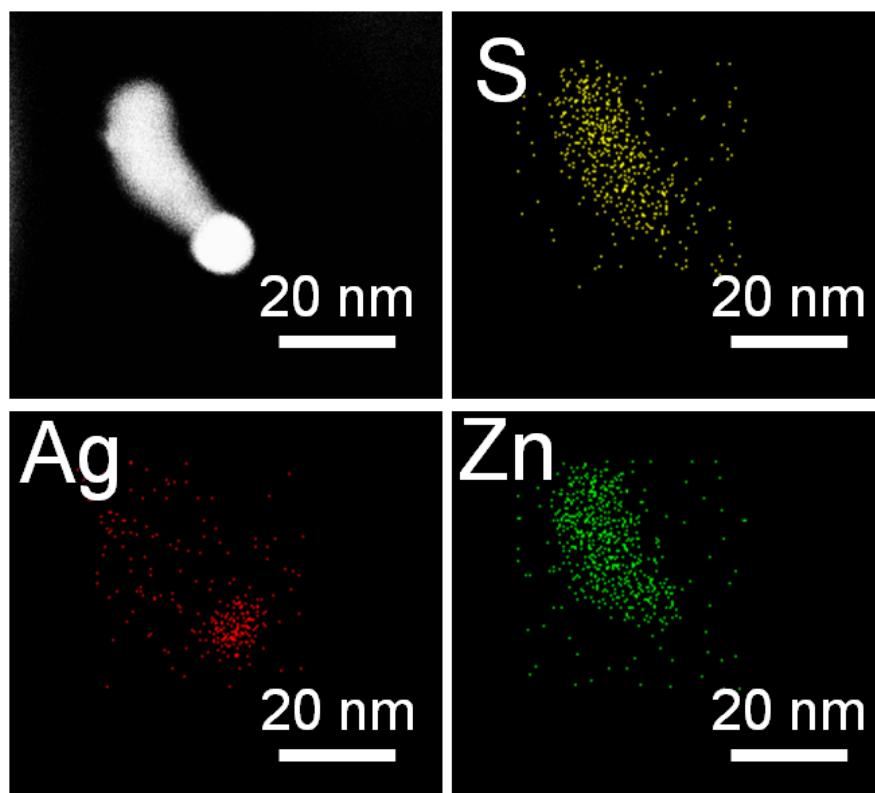


Figure S3. STEM-EDS elemental mapping images of the as-obtained Ag-ZnS heteronanocrystals.

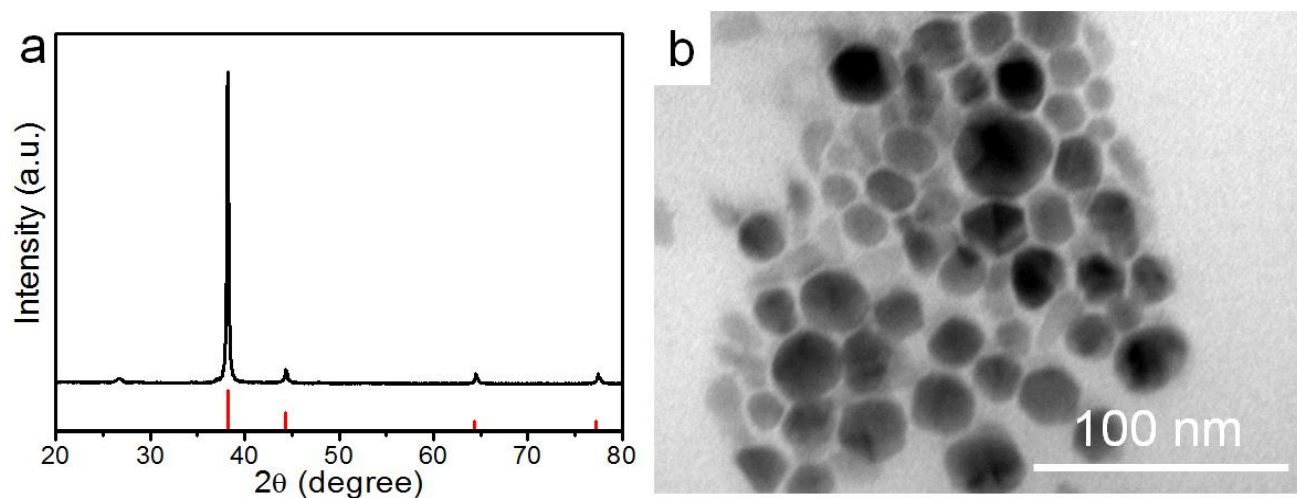


Figure S4. (a) XRD pattern, and (b) TEM image of the Ag nanostructures obtained by chemical transformation of AgInS_2 nanocrystals.

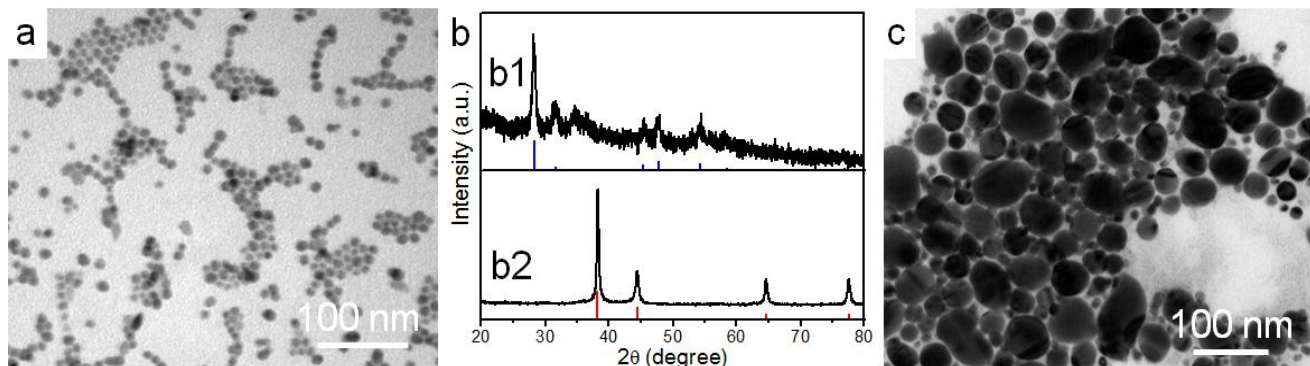


Figure S5. (a) TEM image of the AgFeS_2 nanocrystals, (b) XRD patterns of AgFeS_2 (b1) before chemical transformation, and (b2) after chemical transformation, (c) TEM image of the Ag nanostructures obtained by chemical transformation of AgFeS_2 nanocrystals.

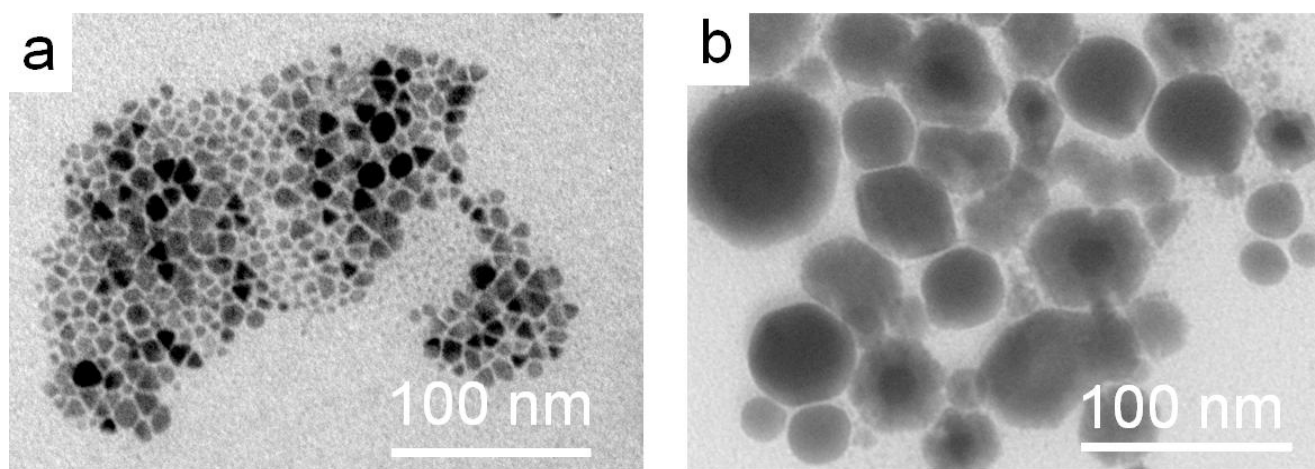


Figure S6. TEM image (a) before chemical transformation, and (b) after chemical transformation of the AgBiSe_2 nanocrystals.

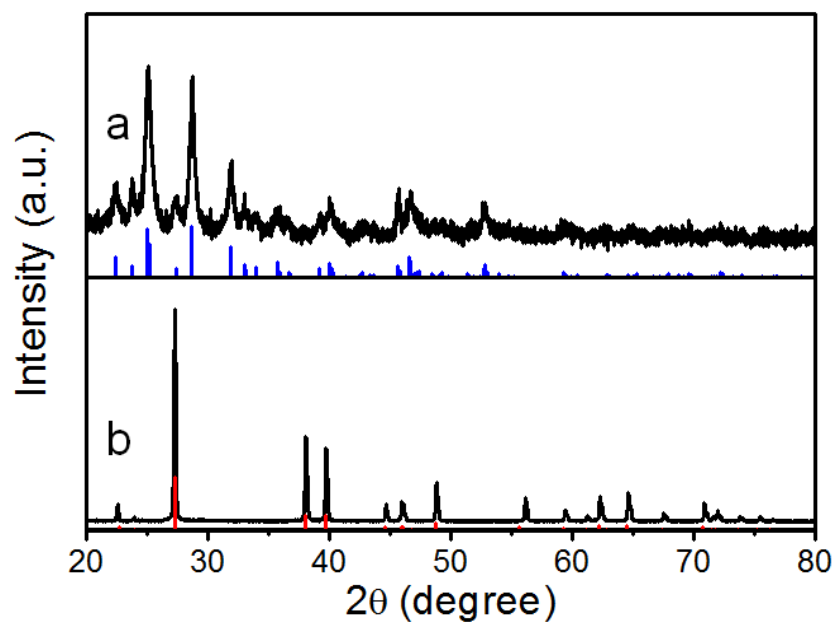


Figure S7. XRD patterns of Bi_2S_3 nanocrystals (a) before chemical transformation, and (b) after chemical transformation.

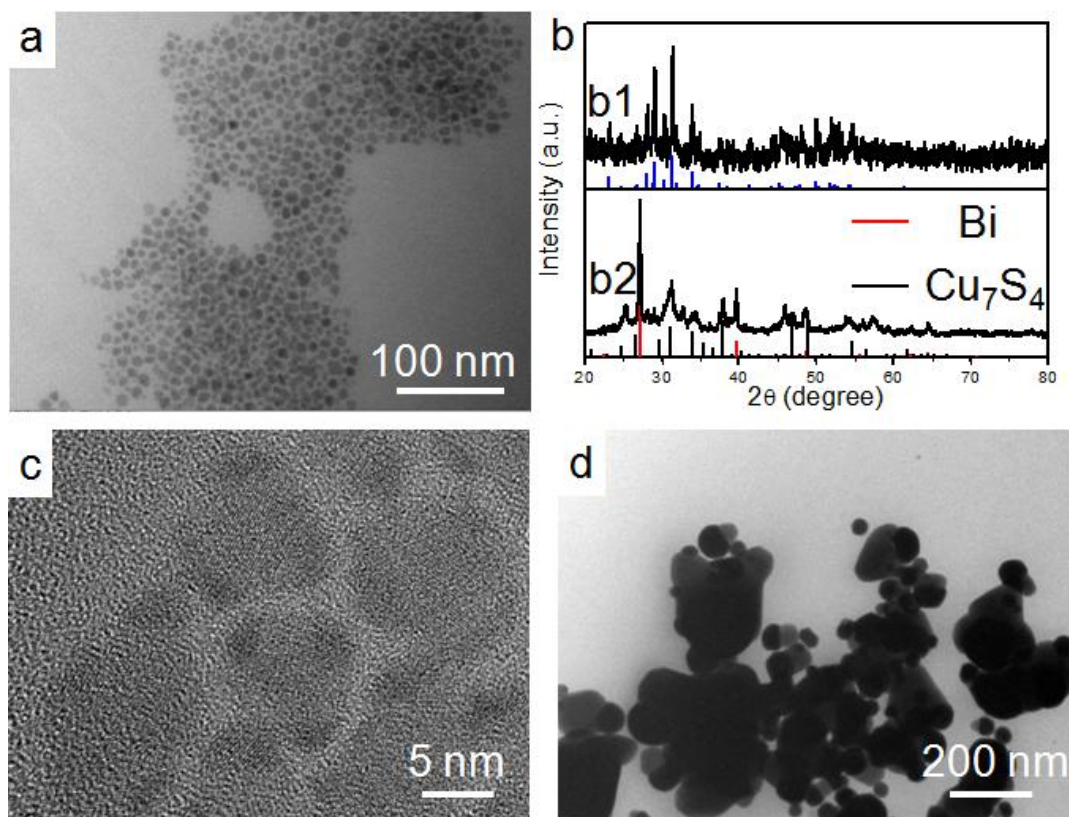


Figure S8. (a) TEM image, (b) XRD patterns of Cu_3BiS_3 nanocrystals (b1) before chemical transformation, and (b2) after chemical transformation, TEM images of the chemical transformation process of Cu_3BiS_3 nanocrystals for different time: (c) 10 min, (d) 30 min.