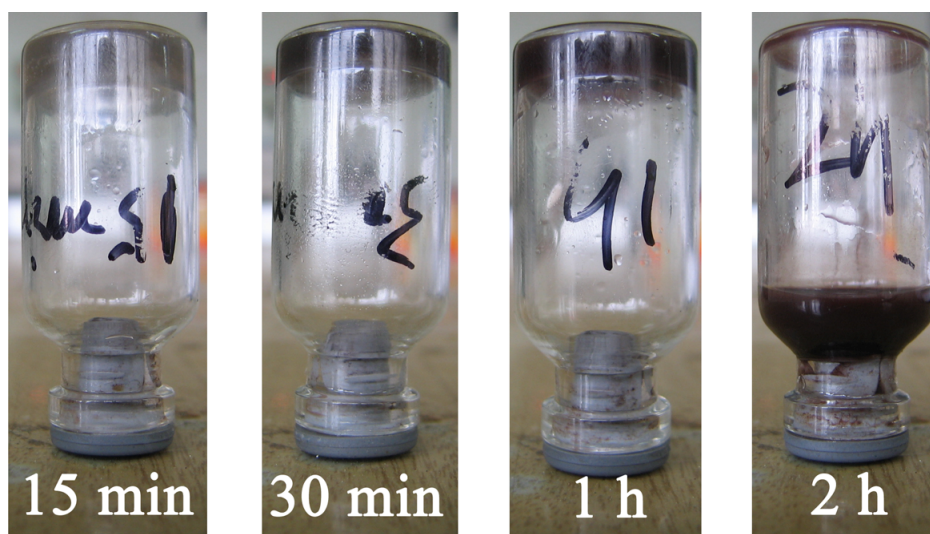
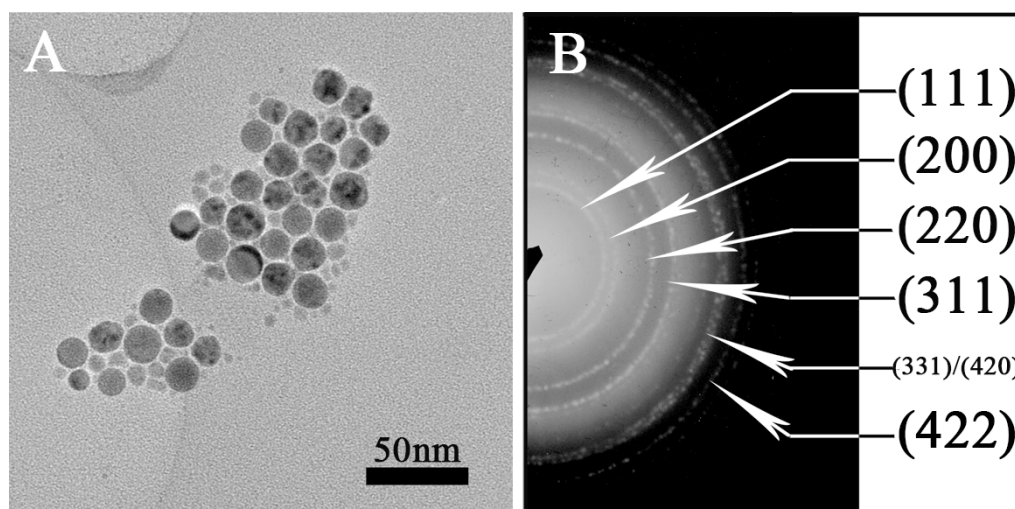


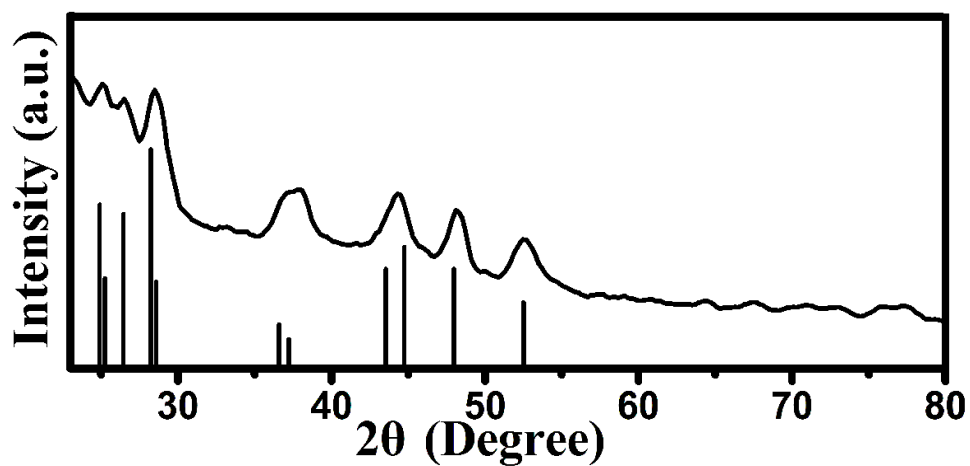
**Supporting Information:**



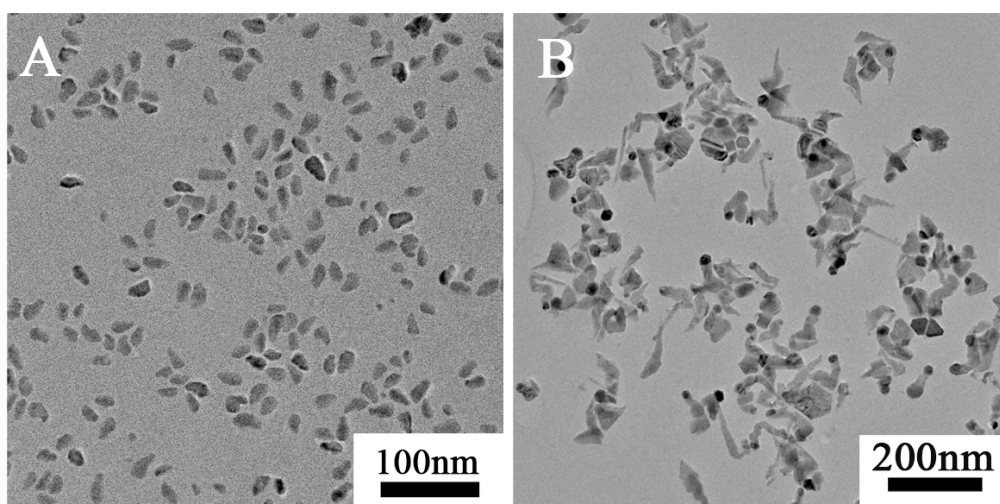
**Figure S1.** Photographs of sample aliquots extracted from AgInS<sub>2</sub> reaction solution at different time.



**Figure S2.** TEM image and SAED of Ag nanocrystals prepared in control experiment without the participation of In(acac)<sub>3</sub>.



**Figure S3.** XRD pattern of heliotrope seed-like  $\text{AgInS}_2$  nanocrystals.



**Figure S4.** (A) Heliotrope seed-like  $\text{AgInS}_2$  nanocrystals synthesized by using 2.5 mL DDT and 2.5 mL OAM as high boiling point solvent. (B) Tadpole-like  $\text{AgInS}_2$  nanocrystals synthesized by using 2.5 mL DDT and 2.5 mL ODE as high boiling point solvent.