

# Synthesis of Ordered Mesoporous Crystalline Ag<sub>2</sub>S and CuS from Mesostructured CdS *via in-situ* Cation Exchange Strategy

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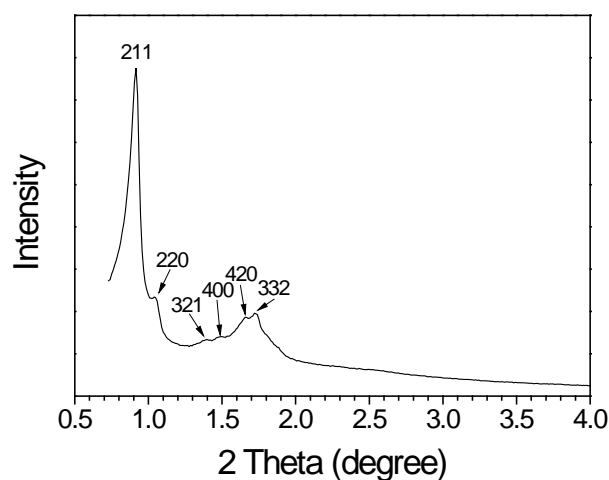


Fig S1. Small angle XRD pattern of the mesoporous silica KIT-6 hard template.

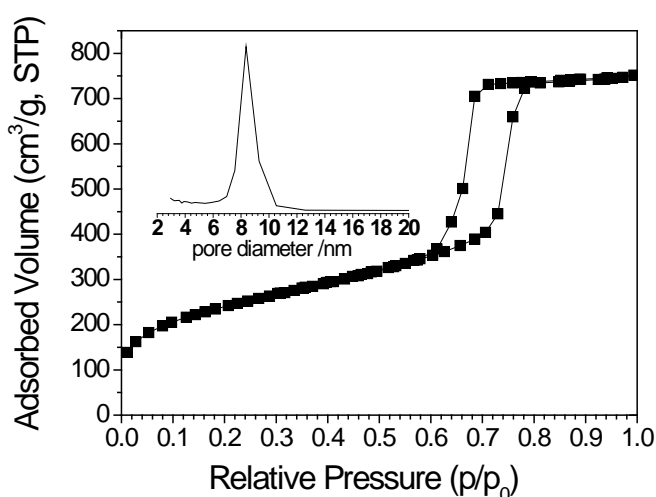


Fig S2. Nitrogen adsorption-desorption isotherms of KIT-6, and the inset is the corresponding pore size distribution curve.

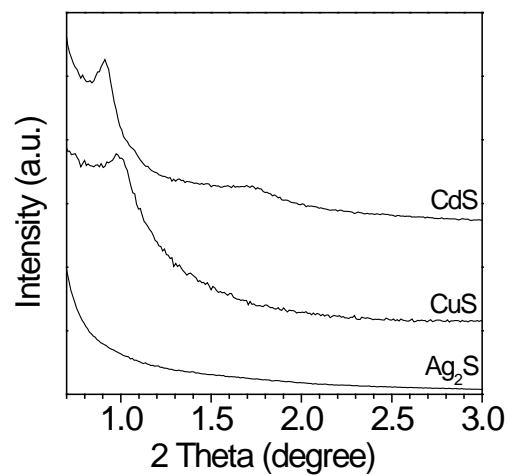


Figure S3. Small angle XRD pattern of mesoporous CdS sample, and the Ag<sub>2</sub>S, CuS product synthesized *via* Route I.

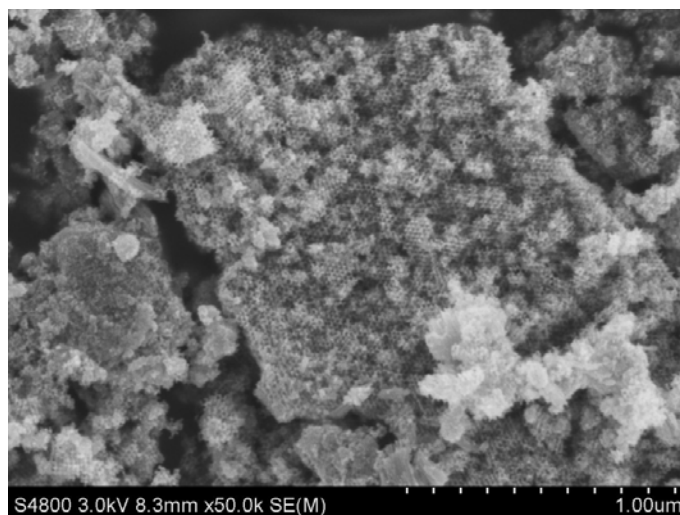


Figure S4. HRSEM image of mesoporous CdS without the silica template.

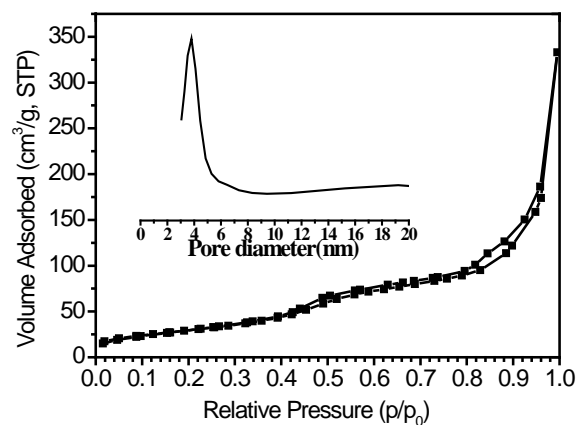


Figure S5. Nitrogen sorption isotherms and the corresponding pore size distribution curve of mesoporous CdS without the silica template.

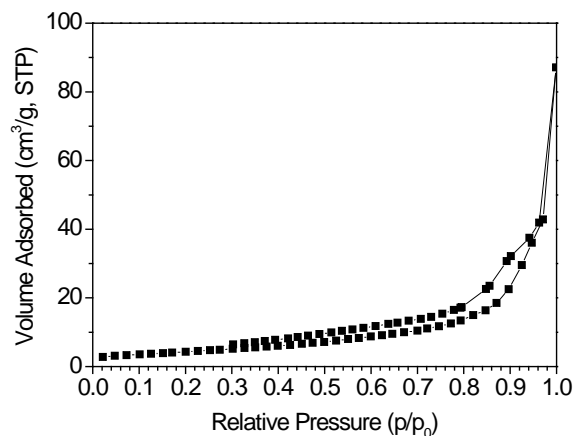


Figure S6. Nitrogen sorption isotherms of  $\text{Ag}_2\text{S}$  synthesized *via* Route I from mesoporous CdS.

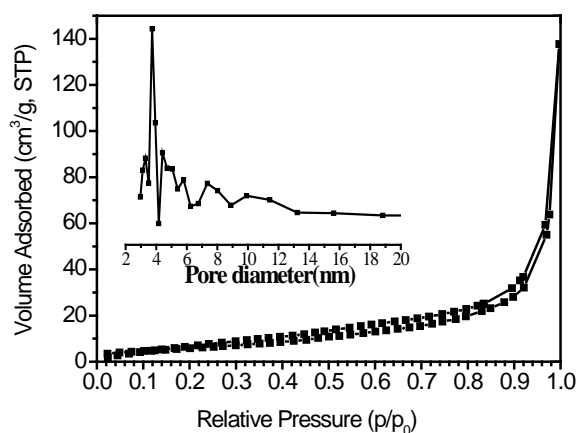


Figure S7. Nitrogen sorption isotherms and the corresponding pore size distribution curve of mesoporous  $\text{Ag}_2\text{S}$  synthesized *via* Route II.

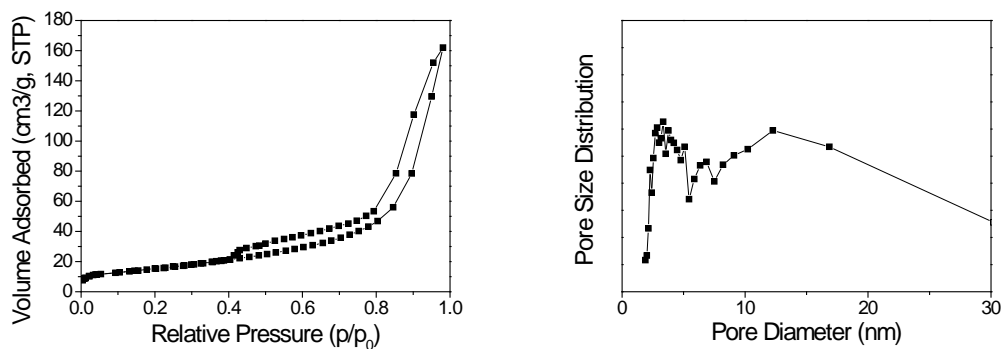


Figure S8. Nitrogen sorption isotherms and the corresponding pore size distribution curve of mesoporous CuS synthesized *via* Route I from mesoporous CdS.

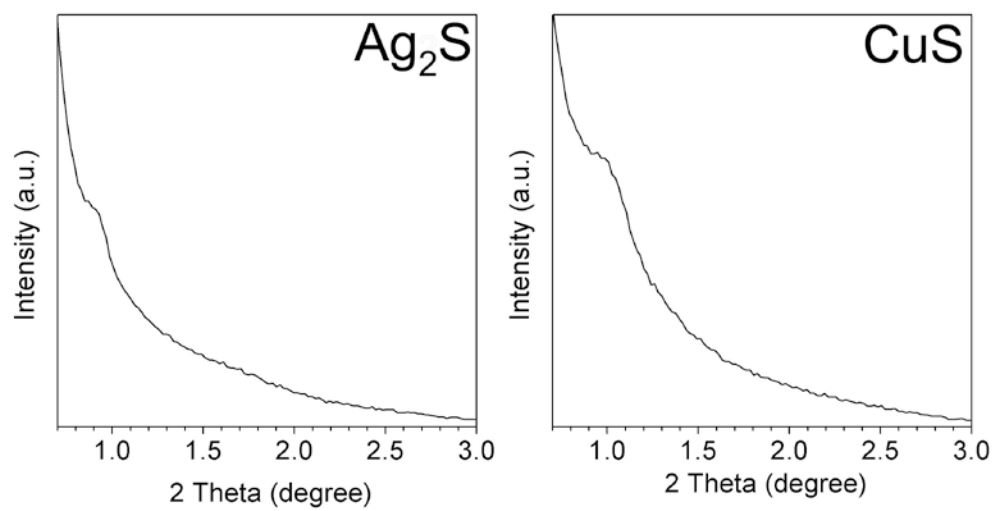


Figure S9. Small angle XRD patterns of mesoporous  $\text{Ag}_2\text{S}$  and  $\text{CuS}$  synthesized *via* Route II.