Supporting Information

Sonochemistry synthesis and enhanced photocatalytic H₂-production activity of nanocrystals embedded in CdS/ZnS/In₂S₃ microspheres

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Fig. S1 XRD patterns of the samples for a) In₂S₃, b) different reaction time.
Fig. S2 N$_2$ adsorption-desorption isotherm and Brunauer-Emmett-Teller (BET) pore-size distribution plot of CdS/ZnS/In$_2$S$_3$.

As shown in Fig. S2, there were two steps on the N$_2$ adsorption-desorption isotherm. The compounds exhibited a hysteresis loop that could be classified as type IV, demonstrating the existence of porous porosity. The BET surface areas of the CdS/ZnS/In$_2$S$_3$ compounds (75% CdS) were 7.5676 m$^2$ g$^{-1}$, while the pore volumes were 0.011254 cm$^3$ g$^{-1}$. The pore size distribution curve was calculated from the adsorption branch of a nitrogen isotherm by the BJH method using the Halsey equation. It could be seen that the pore sizes of the sample concentrate in a range of 4-11 nm. The result supports the fact that the microspheres have a nanoporous structure.
Fig. S3 TEM images of self-assembled CdS/In$_2$S$_3$ microspheres prepared by sonochemistry method: a) TEM image, b) DF-STEM image, c) HRTEM image and d) SAED pattern of sample.
Fig. S4 a) XRD patterns of CdS/ZnS/In$_2$S$_3$ before and after calcination, b) FESEM image of CdS/ZnS/In$_2$S$_3$ after calcination and c) amounts of H$_2$ evolution before and after calcination.

References