Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Electronic Supplementary Information

Facile synthesis of hierarchical $ZnIn_2S_4$ submicrospheres composed of ultrathin mesoporous nanosheets as a highly efficient visible-light-driven photocatalyst for H_2 production

Lu Shang,[ab] Chao Zhou,[a] Tong Bian,[ab] Huijun Yu,[ab] Li-Zhu Wu,[a] Chen-Ho Tung,[a] and Tierui Zhang*[a]

[a]*Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, 100190, P . R. China.*

[b]*University of Chinese Academy of Sciences, Beijing, 100049, P. R. China*

*Corresponding author. E-mail: tierui@mail.ipc.ac.cn.

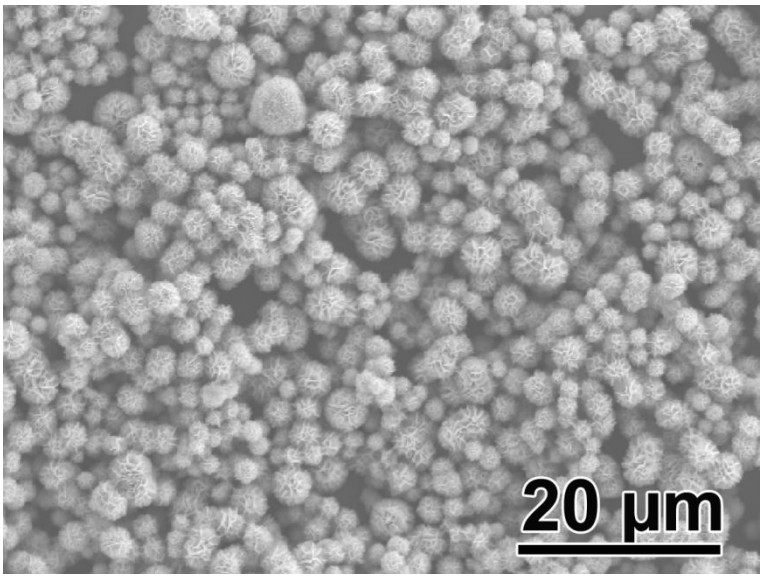

Fig. S1 SEM image of $ZnIn_2S_4$-H.

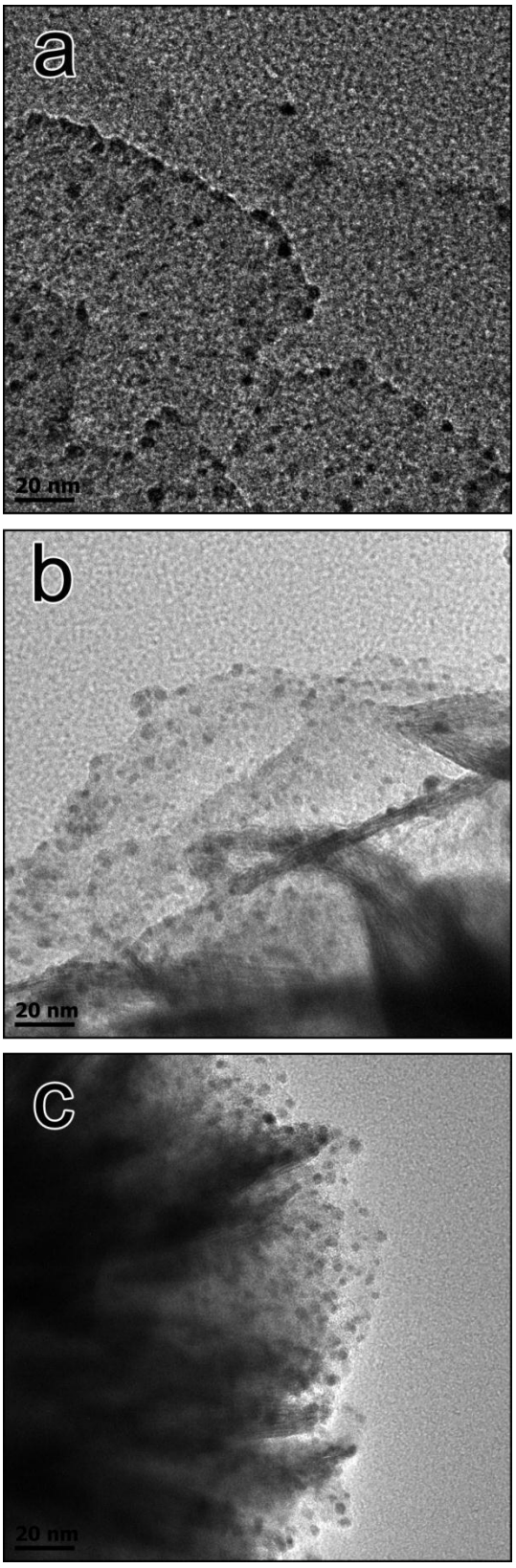

Fig. S2 TEM images of 1 wt% Pt/$ZnIn_2S_4$-220, 1 wt% Pt/$ZnIn_2S_4$-200, and 1 wt% Pt/$ZnIn_2S_4$-H.

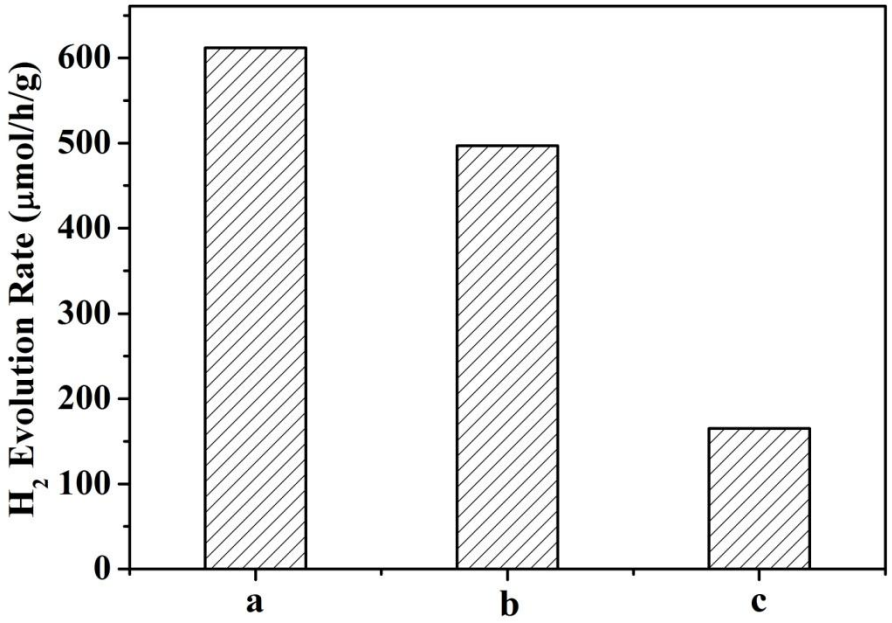

Fig. S3 Photocatalytic H_2 evolution rates over (a) 1 wt% Pt/$ZnIn_2S_4$-220; (b) 1 wt% Pt/$ZnIn_2S_4$-200; and (c) 1 wt% Pt/$ZnIn_2S_4$-H from an aqueous solution containing both Na_2SO_3 and Na_2S under visible light irradiation ($\lambda > 420$ nm) in 2 h.

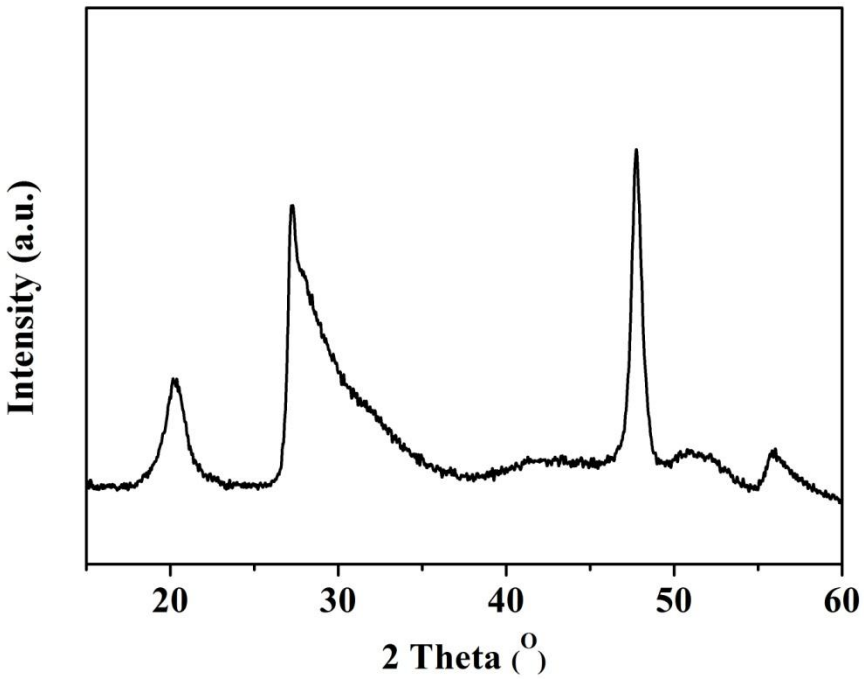

Fig. S4 XRD pattern of $ZnIn_2S_4$-220 after 5 photocatalytic runs.

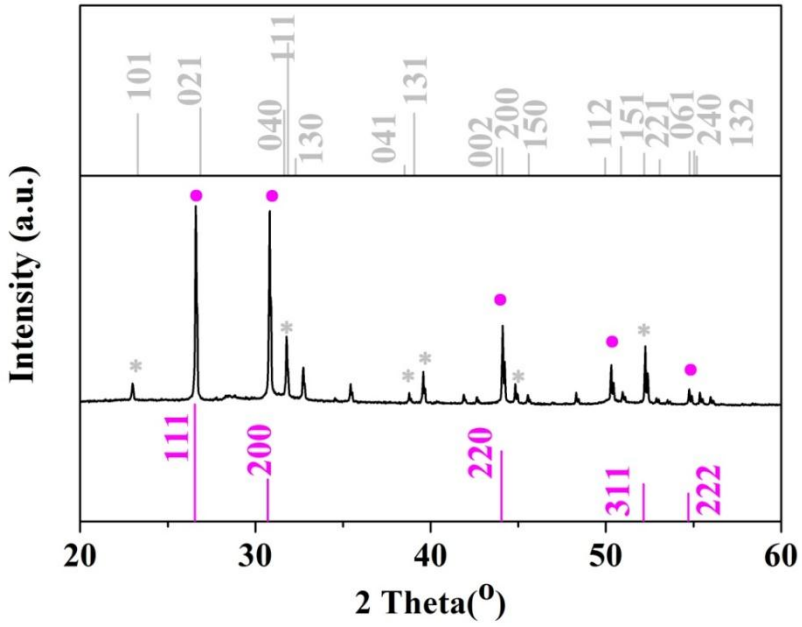

Fig. S5 XRD patterns of as-synthesized SnS (dark; ∗ orthorhombic SnS, • zinc blende SnS), and standard cards of orthorhombic SnS (grey, JCPDS No. 83-1758) and zinc blende SnS (magenta, see ref. 29,30). The additional peaks assigned to a trace amount of impurities (most likely $Sn(OH)_2$ and SnO_2) were also found in this sample.