Supporting Information

Hierarchical flower-like $ZnIn_2S_4$ anchored with well-dispersed $Ni_{12}P_5$ nanoparticles for high-quantum-yield photocatalytic H_2 evolution under visible light

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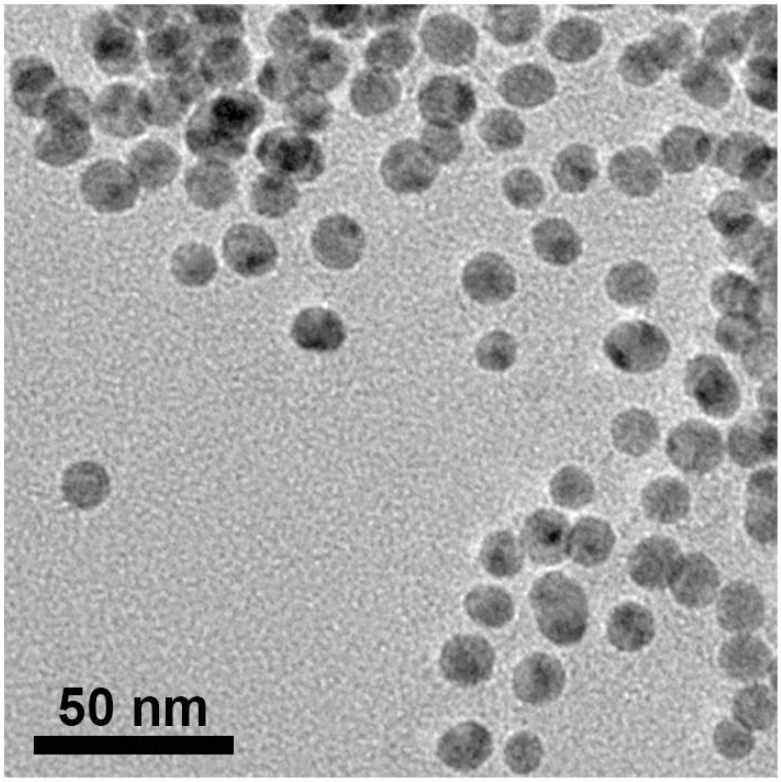

Fig. S1. TEM image of $Ni_{12}P_5$ nanoparticles.

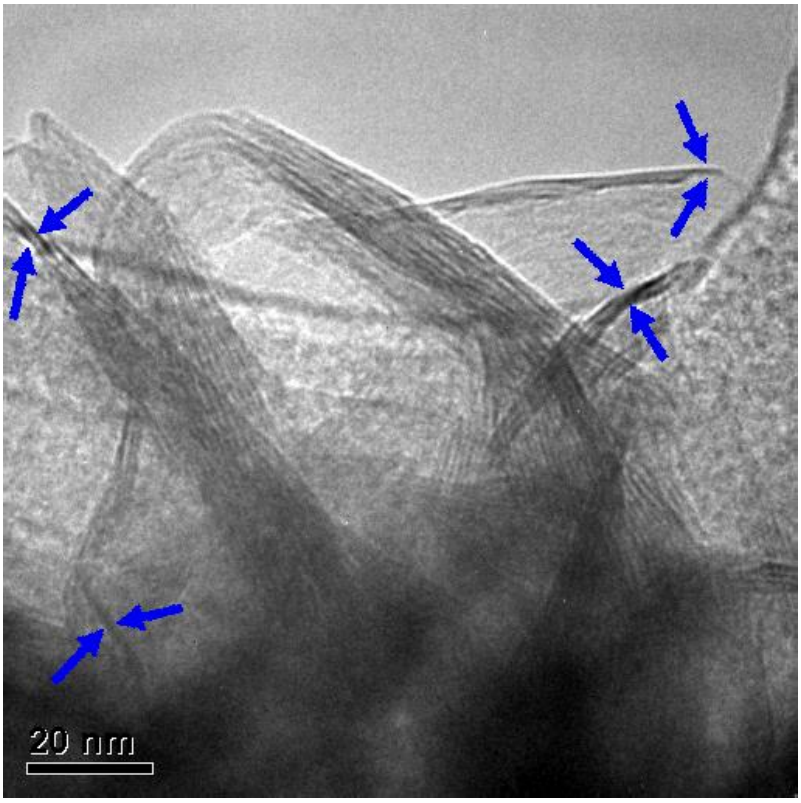

Fig. S2. High-magnification TEM image of $ZnIn_2S_4$.

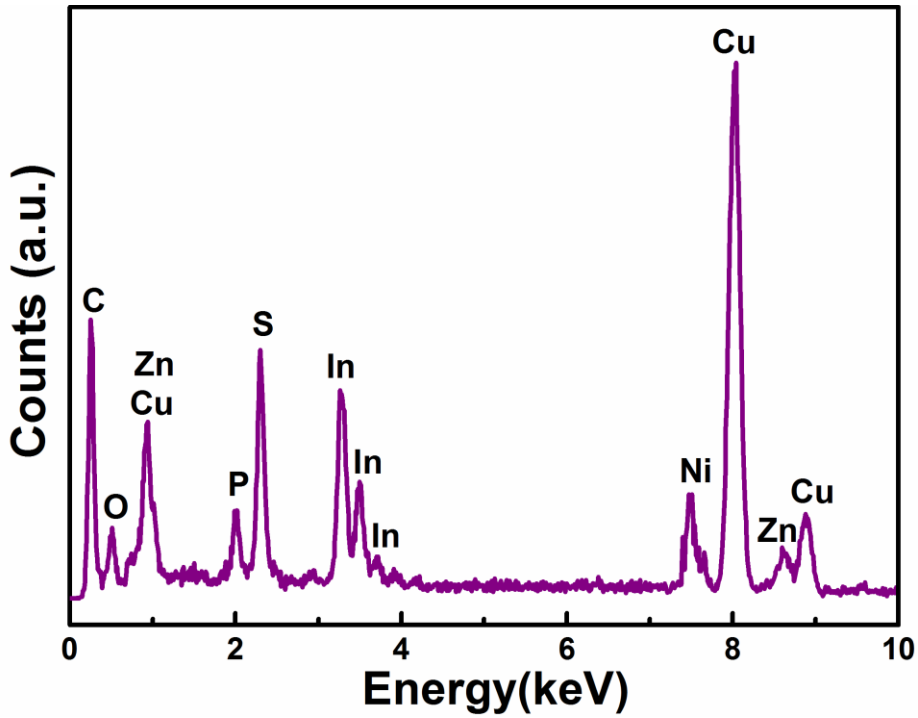

Fig. S3. EDX spectrum of $ZnIn_2S_4/Ni_{12}P_5$ composites.

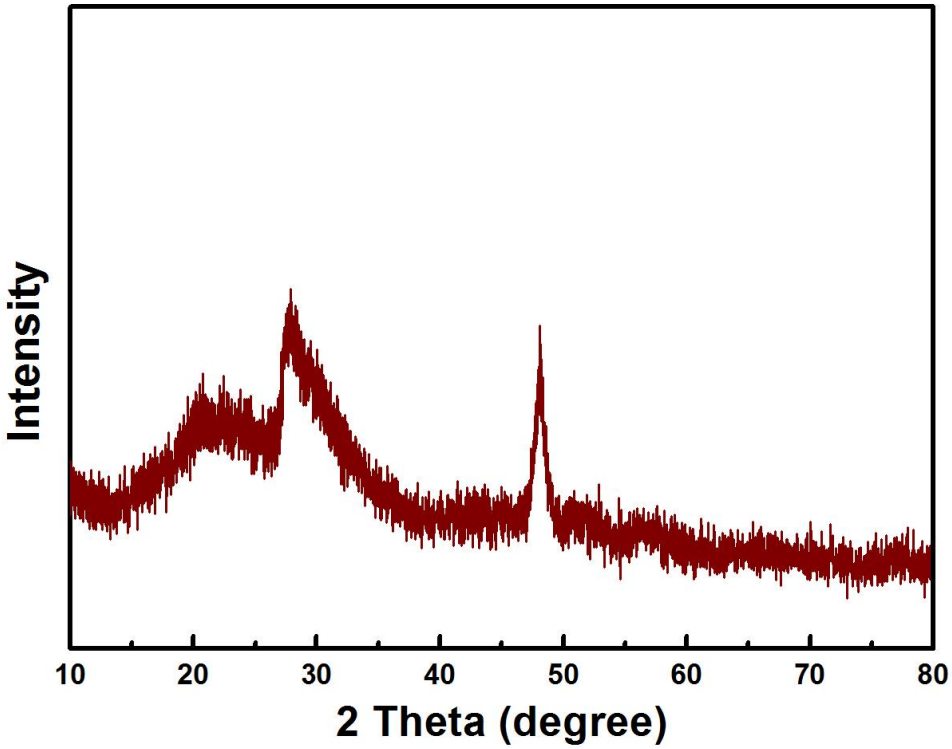

Fig. S4. XRD pattern of spent $ZnIn_2S_4/Ni_{12}P_5$ composites.

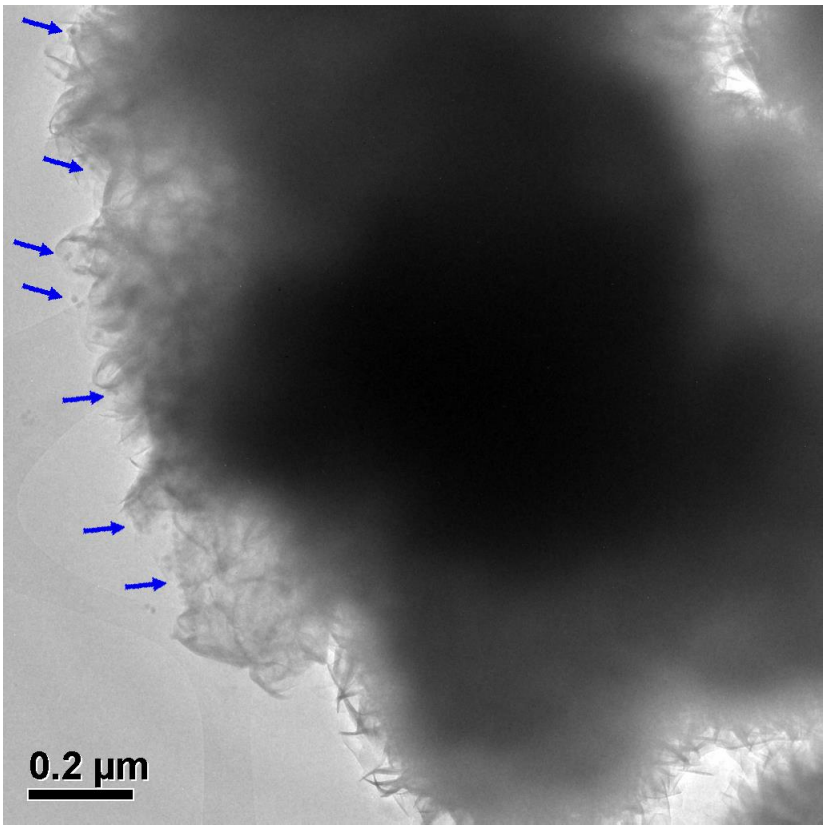

Fig. S5. TEM image of spent $ZnIn_2S_4/Ni_{12}P_5$ composites.

Table S1. Comparison of the photocatalytic H_2 evolution activity of the $ZnIn_2S_4$-based system decorated with precious-metal-free cocatalysts.

Catalyst (Mass)	**Cocatalysts (Loading)**	**Light source**	**Sacrificial reagent**	**Activity (μmol h^{-1} g^{-1})**	**AQY (%) (Wavelength)**	**Ref.**
$ZnIn_2S_4$/RGO/MoS_2 (0.10 g)	RGO/MoS_2 (0.5 wt% RGO)	300 W Xe lamp (λ> 420 nm)	Lactic acid	1620	0.4 (420 nm)	1
RGO/$ZnIn_2S_4$ (0.05 g)	RGO (1 wt%)	300 W Xe lamp (λ> 420 nm)	Lactic acid	817	---	2
CNFs@$ZnIn_2S_4$ (0.03 g)	CNFs (15 wt%)	300 W Xe lamp (λ> 420 nm)	0.25 M Na_2SO_3 0.35 M Na_2S	3167	25.35 (420 nm)	3
$ZnIn_2S_4$/$MoSe_2$ (0.06 g)	$MoSe_2$ (2 wt%)	300 W Xe lamp (λ> 420 nm)	0.25 M Na_2SO_3 0.35 M Na_2S	2228	21.39 (420 nm)	4
Ni_2P/$ZnIn_2S_4$ (0.05 g)	Ni_2P (10 wt%)	300 W Xe lamp (λ> 400 nm)	Lactic acid	2066	7.7 (420 nm)	5
MoS_2/$ZnIn_2S_4$ (0.08 g)	MoS_2 (15 wt%)	300 W Xe lamp (λ> 420 nm)	0.25 M Na_2SO_3 0.35 M Na_2S	975	---	6

$ZnIn_2S_4$@$In(OH)_3$ (0.01 g)	$In(OH)_3$ (-)	300 W Xe lamp (λ> 400 nm)	0.35 M Na_2SO_3 0.25 M Na_2S	522	1.45 (400 nm)	[7]
$ZnIn_2S_4$/$Ni_{12}P_5$ (0.05 g)	**$Ni_{12}P_5$ (1 wt%)**	**300 W Xe lamp (λ> 420 nm)**	**0.25 M Na_2SO_3 0.35 M Na_2S**	**2263**	**20.5 (420 nm)**	**Our work**

RGO, Reduced Graphene Oxide; CNFs, carbon nanofibers

References

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