Supporting Information

Fabrication of a novel $ZnIn_2S_4$/g-C_3N_4/graphene ternary nanocomposite with enhanced charge separation for efficient photocatalytic H_2 evolution under solar light illumination

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Table S1. The rate of H_2 evolution over synthesized CN, ZIS, ZIS-CN, CN-G, ZIS-G, and ZIS-G-CN photocatalysts under solar light.

S.No.	Photocatalyst	Amount (mg)	Rate of H_2 evolution ($\mu molh^{-1}g^{-1}$)
1	Pure g-C_3N_4	5	6.1
2	Pure $ZnIn_2S_4$	5	139
3	$ZnIn_2S_4$-g-C_3N_4	5	184
4	g-C_3N_4-graphene	5	192
5	$ZnIn_2S_4$-graphene	5	400
6	$ZnIn_2S_4$-graphene-g-C_3N_4	5	477

Calculation of band edge potentials of $ZnIn_2S_4$ and g-C_3N_4

The conduction band edge potential (E_{CB}) and valence band potentials (E_{VB}) of $ZnIn_2S_4$ are -0.67 and +1.30 eV, and of g-C_3N_4 are -1.30 and +1.43 eV respectively, according to the empirical equations:

$$E_{CB} = X - E_e + 0.5E_g \rightarrow 1$$

$$E_{VB} = E_g - E_{CB} \rightarrow 2$$

'X' is the electro-negativity of the semiconductor (4.82 eV for $ZnIn_2S_4$ and 4.73 for g-C_3N_4);

'E_e' is the energy of free electrons on the hydrogen scale (~4.5 eV);

'Eg' is the band gap energies of the $ZnIn_2S_4$ and g-C_3N_4 are1.97 eV and 2.73 eV in our experiment.

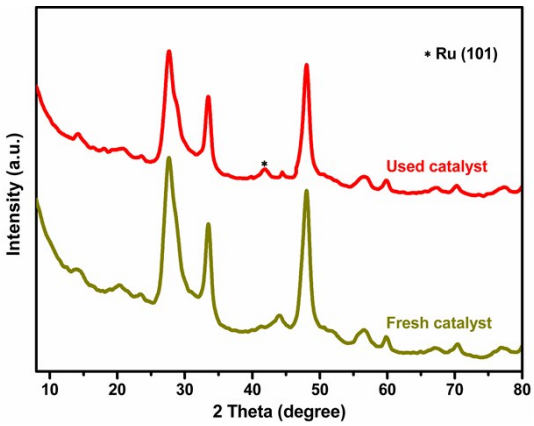

Figure S1. PXRD patterns of the synthesized ternary ZIS-CN-G nanocomposite before and after photocatalytic experiments.