

## Supplementary Information

### **Fabrication of graphene wrapping ZnIn<sub>2</sub>S<sub>4</sub> microspheres heterojunction with enhanced interfacial contact and its improved photocatalytic performance**

Houfen Li, Hongtao Yu, Shuo Chen, Huimin Zhao, Yaobin Zhang, Xie Quan\*

Key Laboratory of Industrial Ecology and Environmental Engineering (Ministry of Education), School of Environmental Science and Technology, Dalian University of Technology, Dalian 116024, China

Correspondence\*

Xie Quan. Dalian, China. Fax: +86-411-84706263; Tel: +86-411-84706140; E-mail: [quanxie@dlut.edu.cn](mailto:quanxie@dlut.edu.cn)

### UV-vis absorbance spectrum of as-prepared ZnIn<sub>2</sub>S<sub>4</sub>

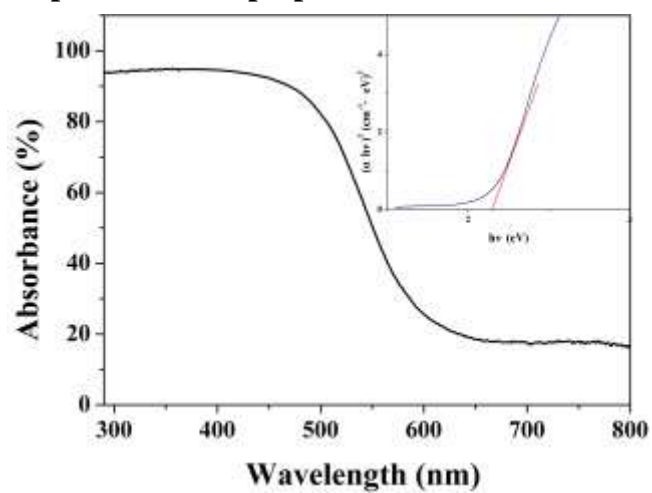


Figure S1. UV-vis absorbance spectrum of as-prepared ZnIn<sub>2</sub>S<sub>4</sub>.

### **Calculation of electron affinity of ZnIn<sub>2</sub>S<sub>4</sub>**

In general, the electron affinity of semiconductor was equal to the conduction band potential vs vacuum level.

The conduction band edge potential ( $E_{CB}$ ) of ZnIn<sub>2</sub>S<sub>4</sub> was calculated to be -0.75 eV (vs NHE) according to the empirical equations:  $E_{CB} = E_{VB} - E_g$  and  $E_{VB} = X - E_e + 0.5 E_g$ ;

where  $E_{VB}$  is the valence band edge potential;

X is the electronegativity of the semiconductor (4.82 eV for ZnIn<sub>2</sub>S<sub>4</sub>);

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

$E_g$ , the band gap energy of the ZnIn<sub>2</sub>S<sub>4</sub>, is 2.15 eV in our experiment.

Therefore, the electron affinity of ZnIn<sub>2</sub>S<sub>4</sub> is 3.75 eV.

### Energy-Dispersive Spectroscopy (EDS) of $\text{ZnIn}_2\text{S}_4$



Figure S2. The selected area of EDS

Table S1. EDS results of  $\text{ZnIn}_2\text{S}_4$

Elt.	Line	Intensity (c/s)	Conc	Units	Error 2-sig	MDL 3-sig	
S	Ka	420.37	26.376	wt.%	2.160	.900	
Zn	Ka	69.98	15.375	wt.%	4.951	1.193	
In	La	477.73	58.249	wt.%	1.097	.758	
			100.000	wt.%			Total

### Raman spectrum of ZnIn<sub>2</sub>S<sub>4</sub>@2 wt% Gr

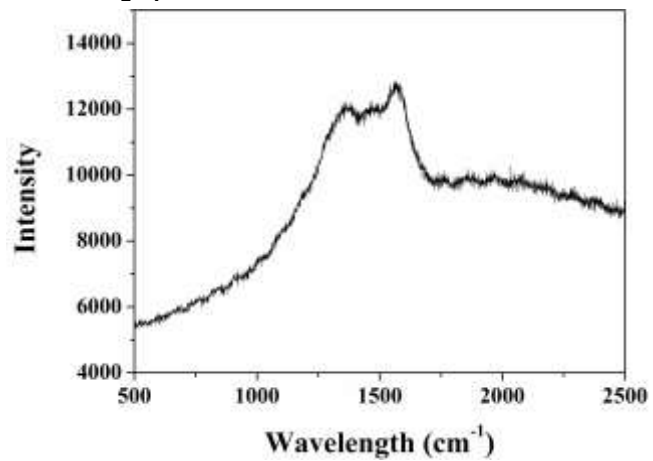


Figure S3. Raman spectrum of ZnIn<sub>2</sub>S<sub>4</sub>@2 wt% Gr