

## Supporting Information

### Collaboratively Hydrothermal and Calcination Fabrication of ZnOS Heterostructures for Visible-Light-Driven H<sub>2</sub> Production

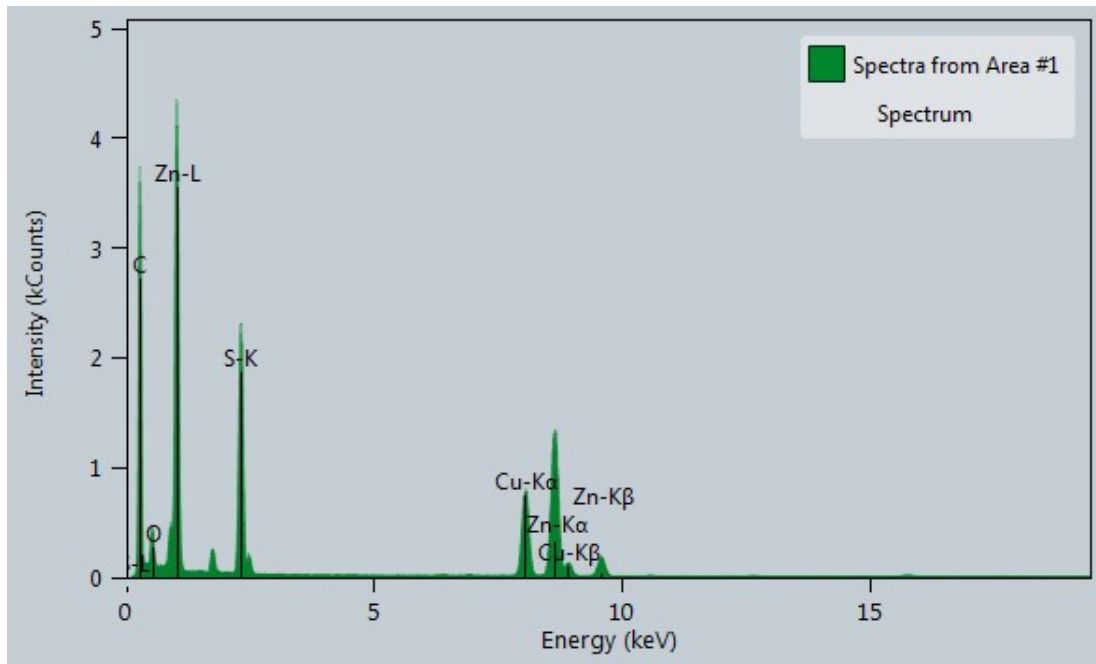
XueLi Chen<sup>a\*</sup>, ChenXiang Lin<sup>b</sup>, LanHai Lai<sup>a</sup>, MingRui Liu<sup>c</sup>, Kai Zheng<sup>a</sup>, SongTao Li<sup>a</sup>, HaiTao Li<sup>a\*</sup>

a Jiangxi Provincial Key Laboratory of Low-Carbon Solid Waste Recycling, School of Geography and Environmental Engineering, Gannan Normal University, Ganzhou 341000, P. R. China.

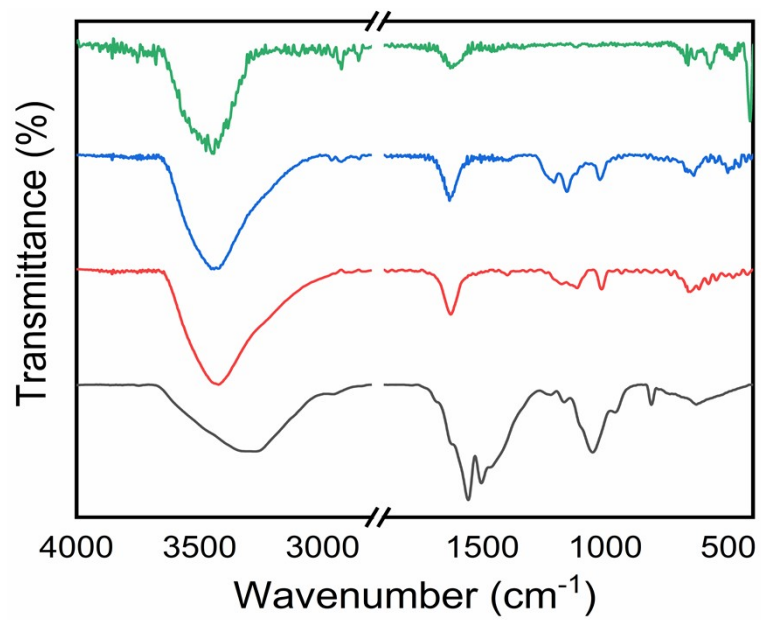
b Guangxi Key Laboratory of Natural Polymer Chemistry and Physics, Nanning Normal University, Nanning 530001, China.

c Foshan Xianhu Laboratory of the Advanced Energy Science and Technology Guangdong Laboratory, Foshan 528216, PR China.

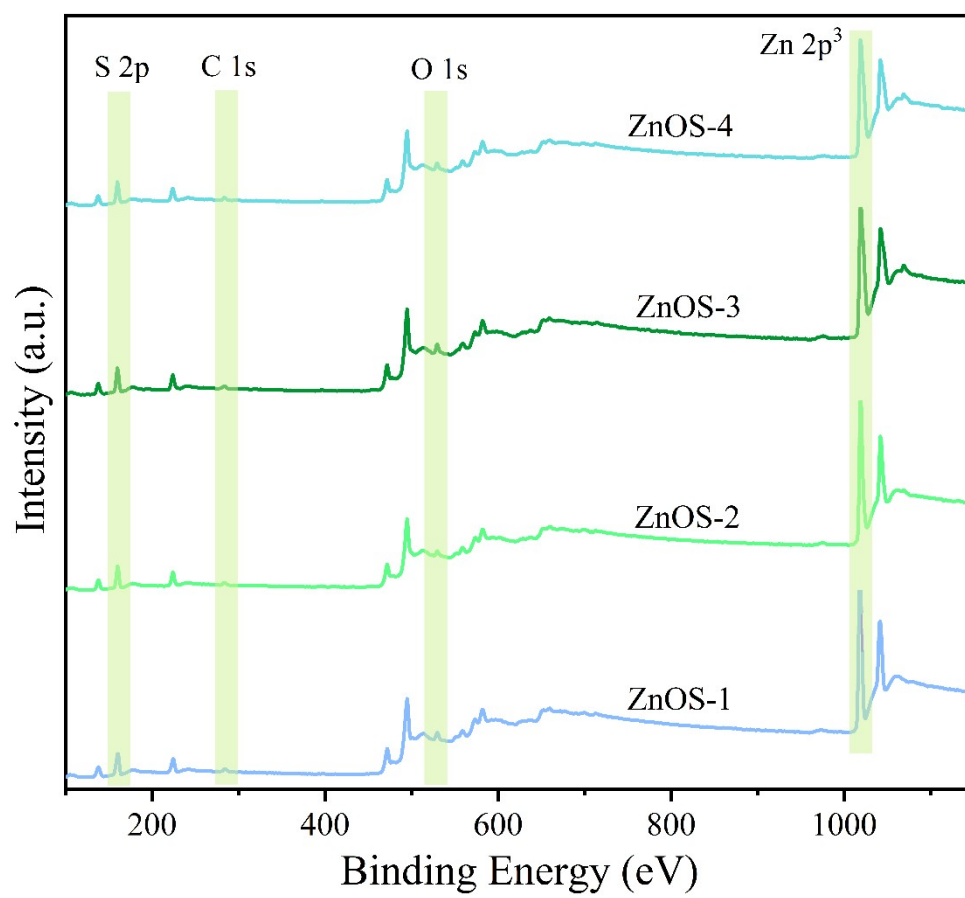
**\*Corresponding Author:** Xueli Chen (e-mail: [xueli089@foxmail.com](mailto:xueli089@foxmail.com)); Haitao Li (e-mail: [lihaitao103904@126.com](mailto:lihaitao103904@126.com)).



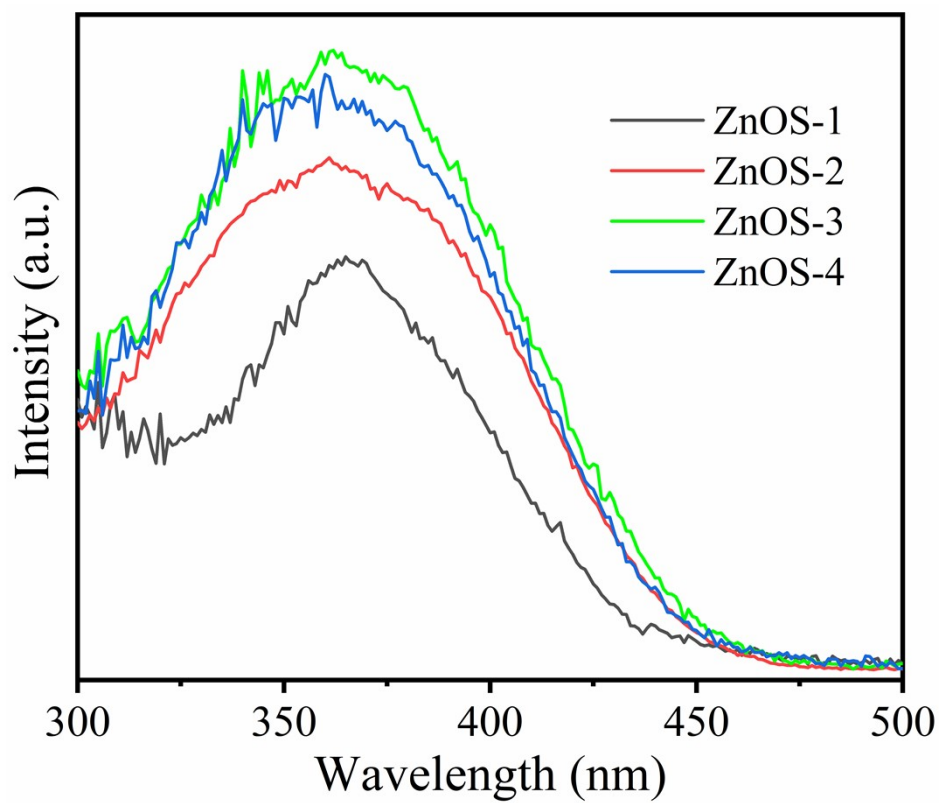
**Figure S1.** SEM spectra of ZnOS-3.



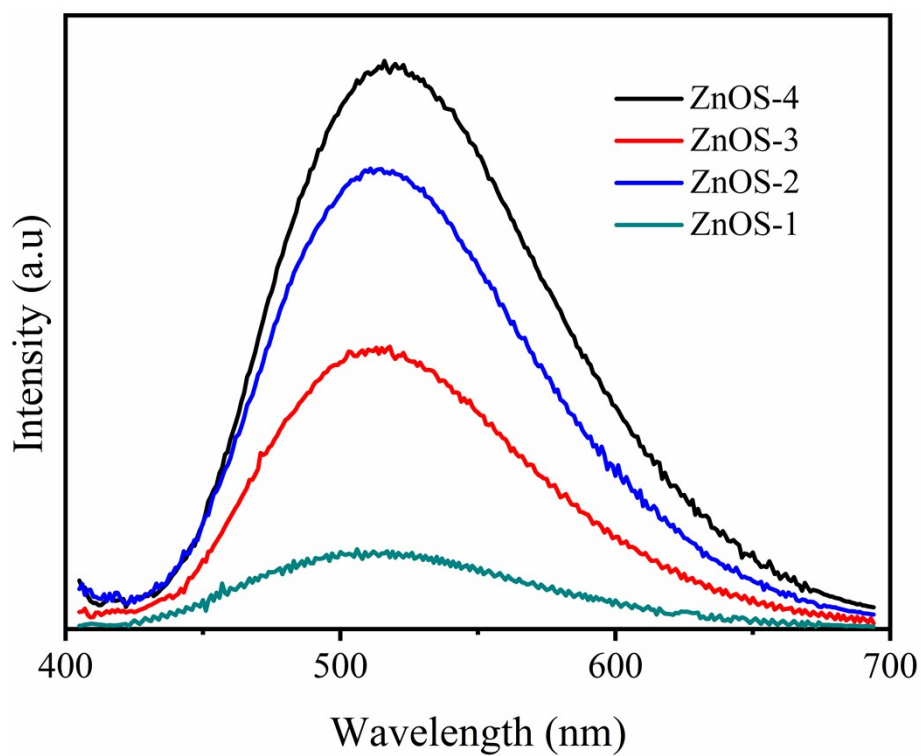
**Figure S2.** FT-IR spectra of ZnOS-X.



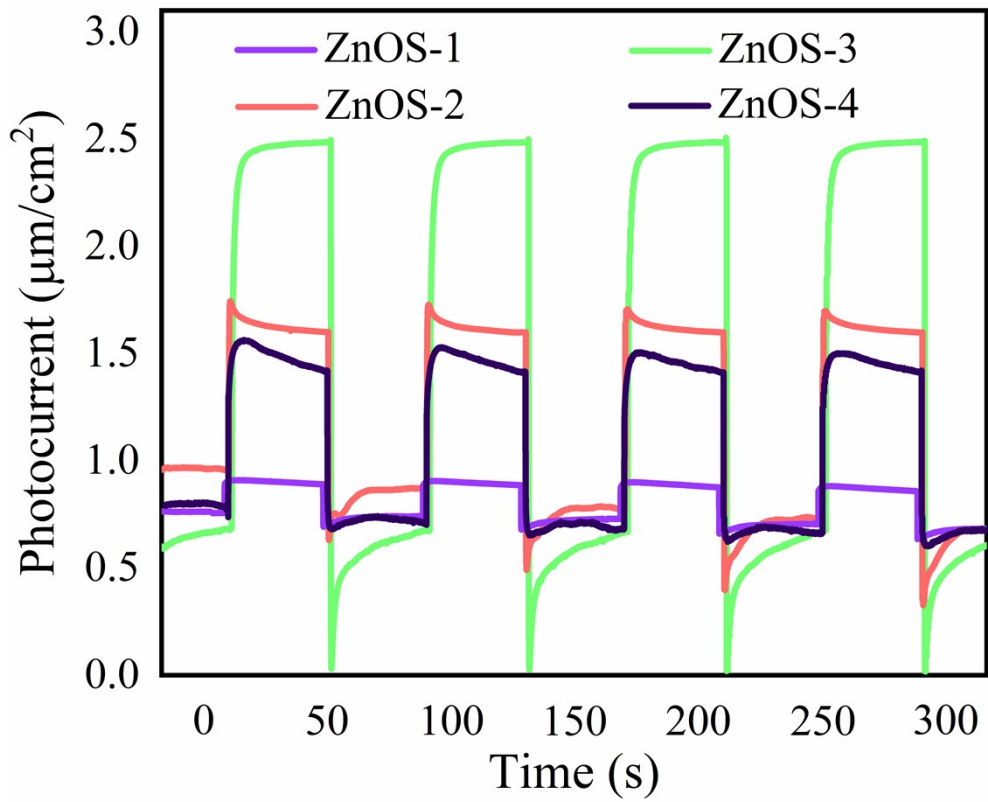
**Figure S3.** XPS survey spectrum of ZnOS-x.



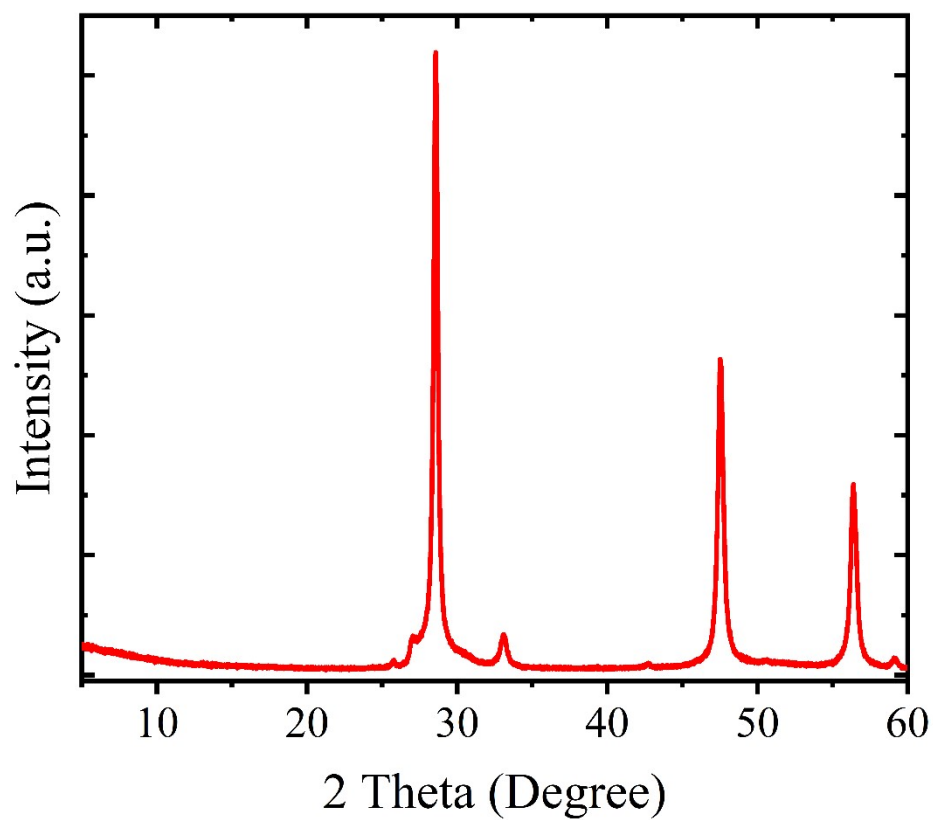
**Figure S4.** UV-vis diffuse-reflectance spectra of ZnOS-x.



**Figure S5.** Photoluminescence emission spectra (excitation wavelength = 360nm) of ZnOS-x.



**Figure S6.** photocurrent-time dependence of ZnOS-x.



**Figure S7.** PXRD patterns of ZnOS-3 after photocatalytic H<sub>2</sub> evolution reaction.



**Table S1** Specific surface area of the ZnOS-x.

	$S_{\text{BET}}$ (m <sup>2</sup> /g)	R <sup>2</sup>	C
ZnOS-1	17	0.99994	87.7
ZnOS-2	19.2	0.99994	83.693
ZnOS-3	20.2	0.99995	75.192
ZnOS-4	4	0.99959	101.163

**Table S2** ICP-MS results for the molar ratio of of the ZnOS-3 before and after photocatalytic reaction.

	before	after
ZnOS-3 (ppm)	2.56	2.18