Supporting Information

Fabrication of ZnO/Red Phosphorus Heterostructure for Effective Photocatalytic H_2 Evolution from Water Splitting

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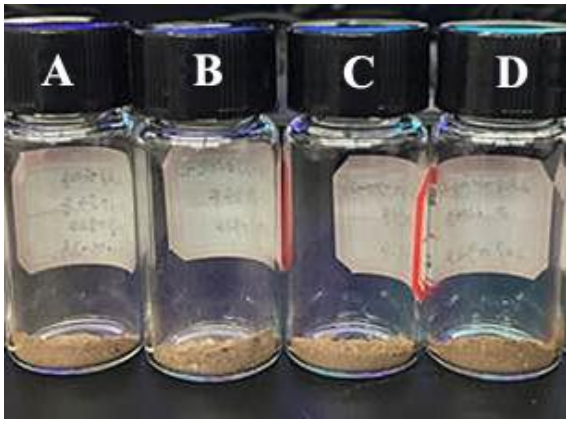

Figure S1. Digital photograph of the heterostructure (A:ZRP-1, B:ZRP-5, C:ZRP-10, D:ZRP-15).

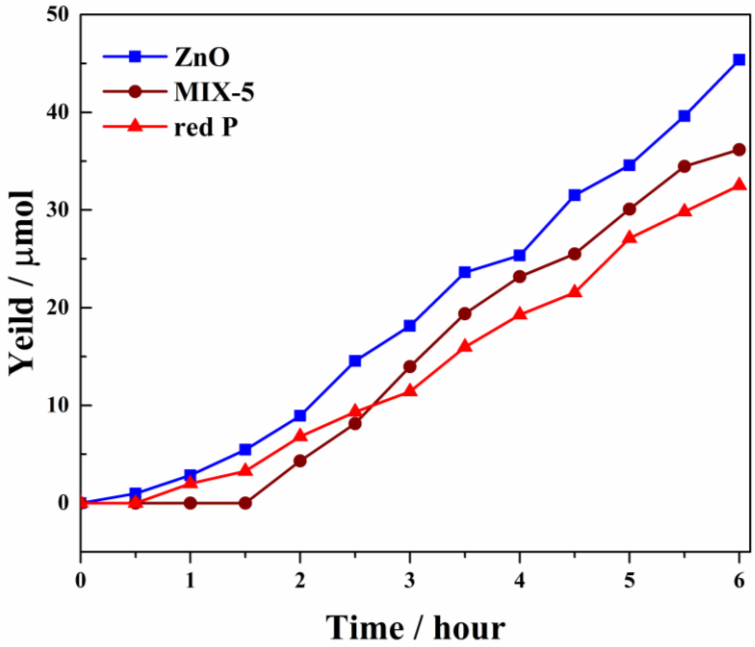

Figure S2. The photocatalytic H_2 production of red P, ZnO, and mechanical mixture (the content of red P is 5%).

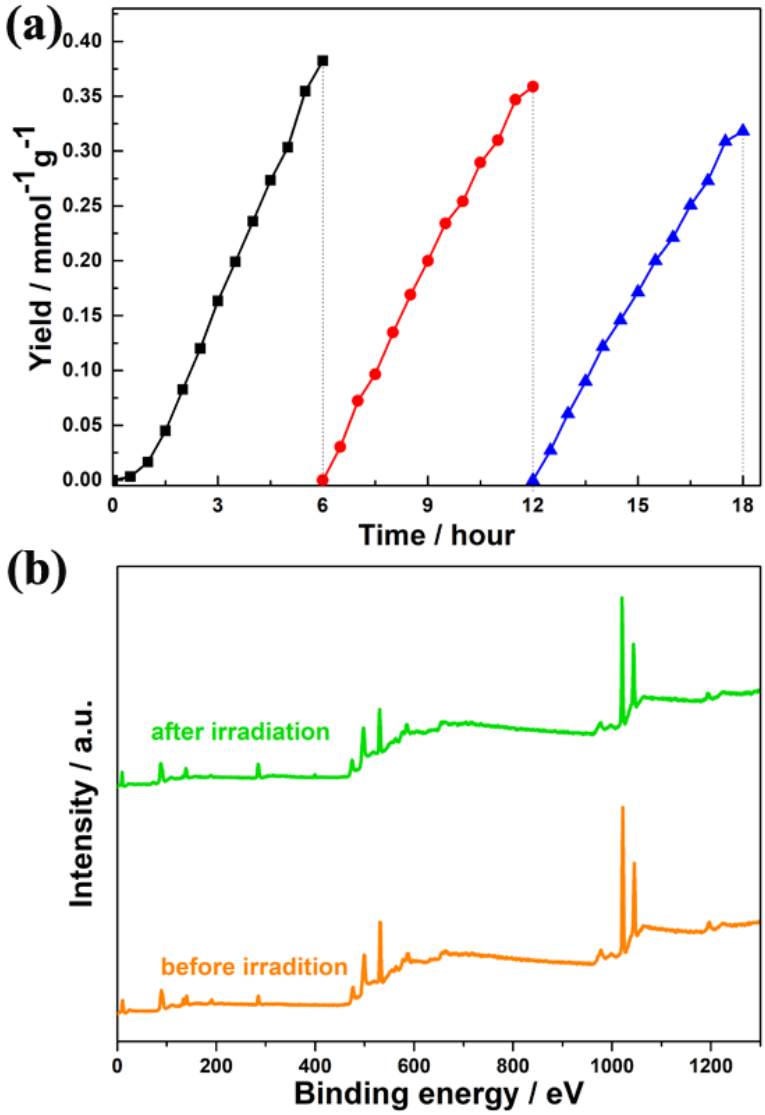

Figure S3. (**a**) The recycling H_2 evolution reaction of ZRP-5 heterojunction. (**b**) The compared XPS pattern of ZRP-5 before and after irradiation.

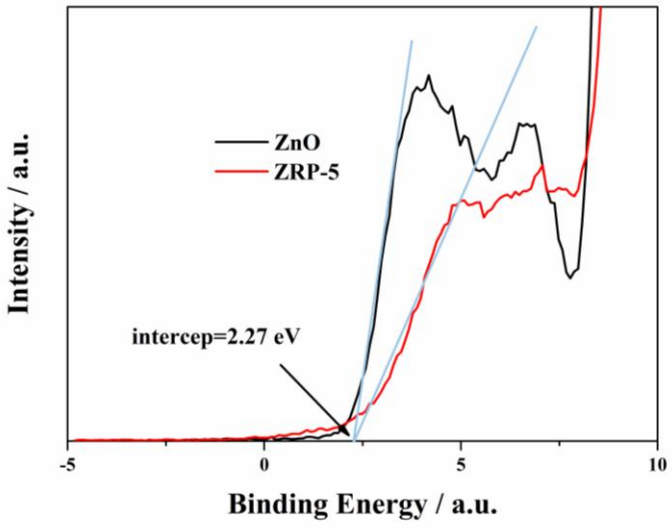

Figure S4. The valence band XPS of ZnO and ZRP-5.

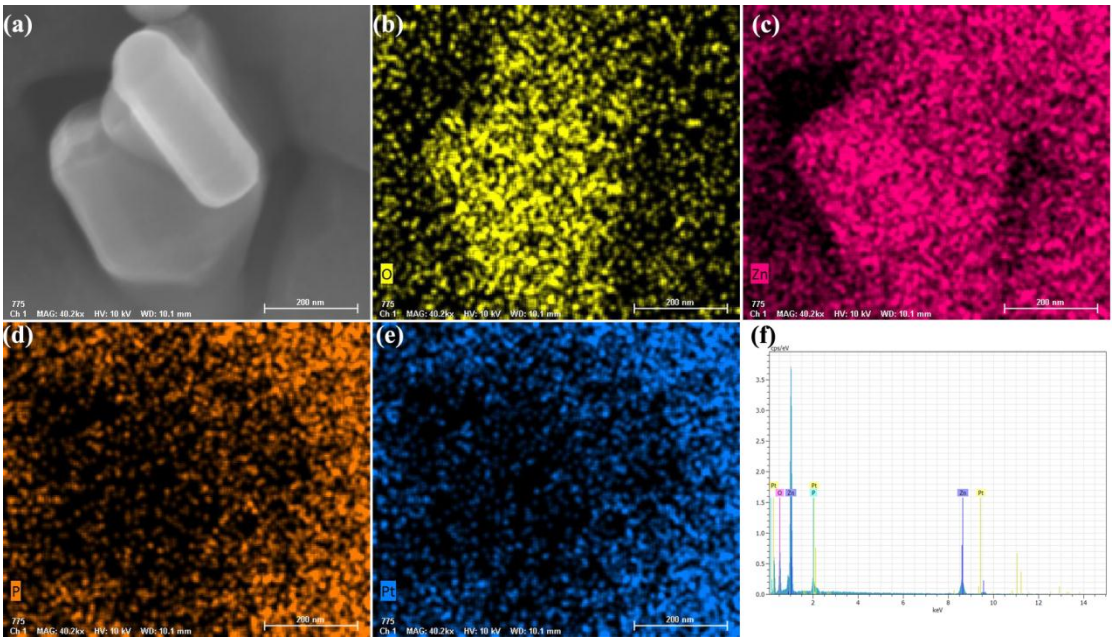

Figure S5. (**a**) SEM image of recycled ZRP-5 sample after water splitting photocatalytic reaction. (**b**–**d**) EDS mapping of O, Zn, P and Pt. (f) EDS spectra.

Table S1. Specific surface area and pore volume of the samples.

Samples	Pore volume/cm^3/g	$S_{BET}/m^2/g$
ZnO	0.0117 cm^3/g	11.8545 m^2/g
ZRP-5	0.0156 cm^3/g	16.2399 m^2/g