Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Bandgap-Tunable Phosphorus-Doped Monolayer Graphene with Enhanced Visible-Light Photocatalytic H_2-Production Activity

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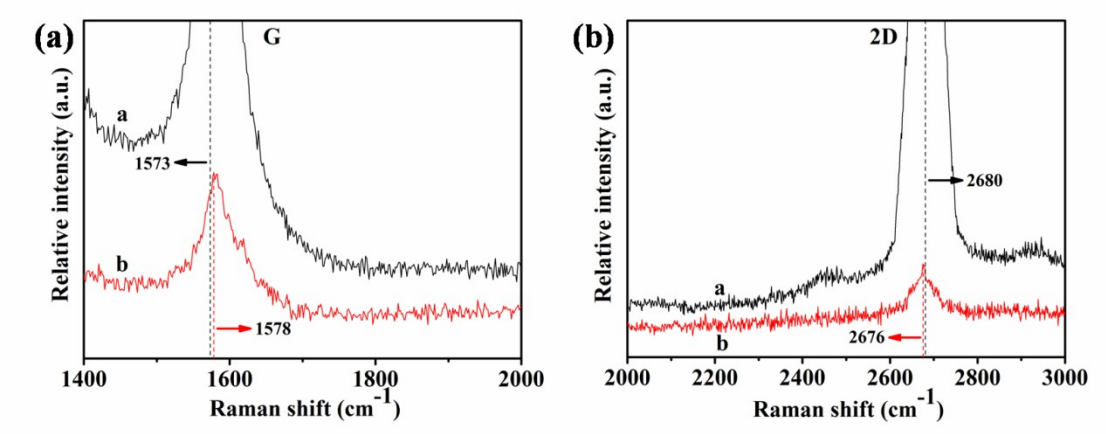

Fig. S1 Zooms of the G and 2D Raman peaks for (a) GP0 and (b) GP3.

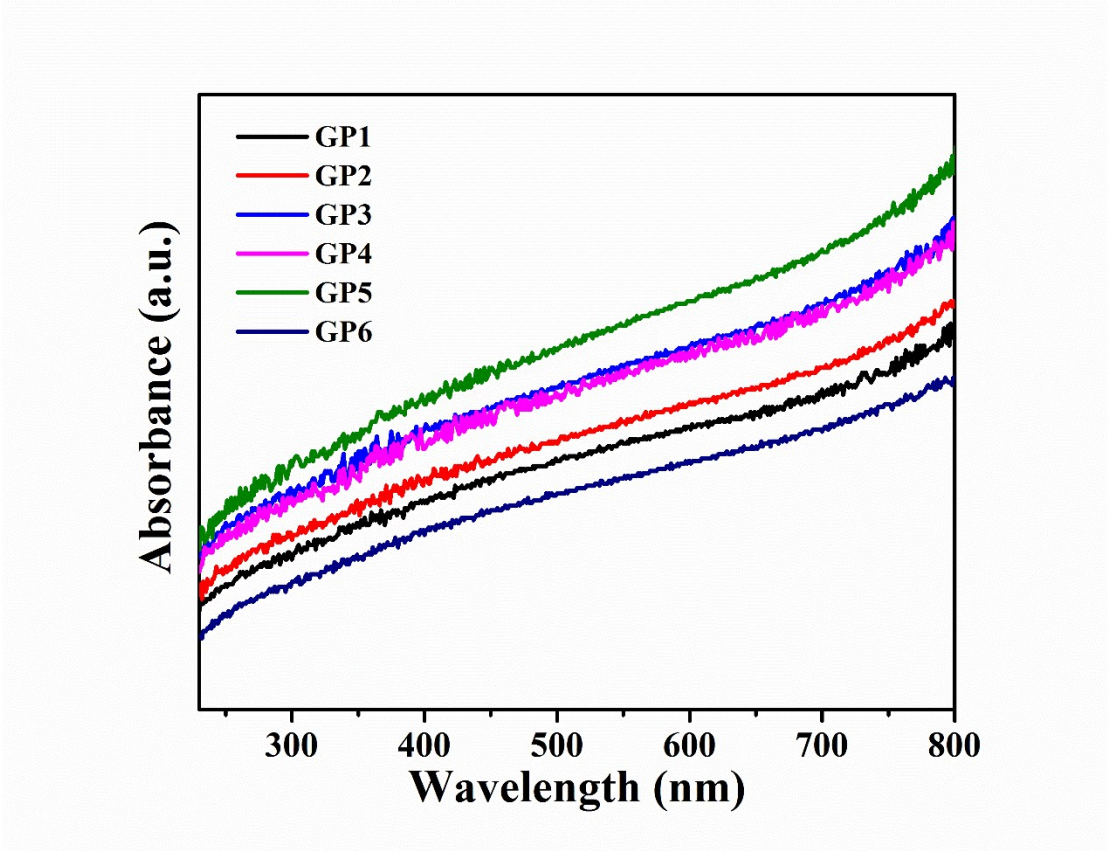

Fig. S2 UV-vis diffuse reflection spectra of GP1, GP2, GP3, GP4, GP5 and GP6.

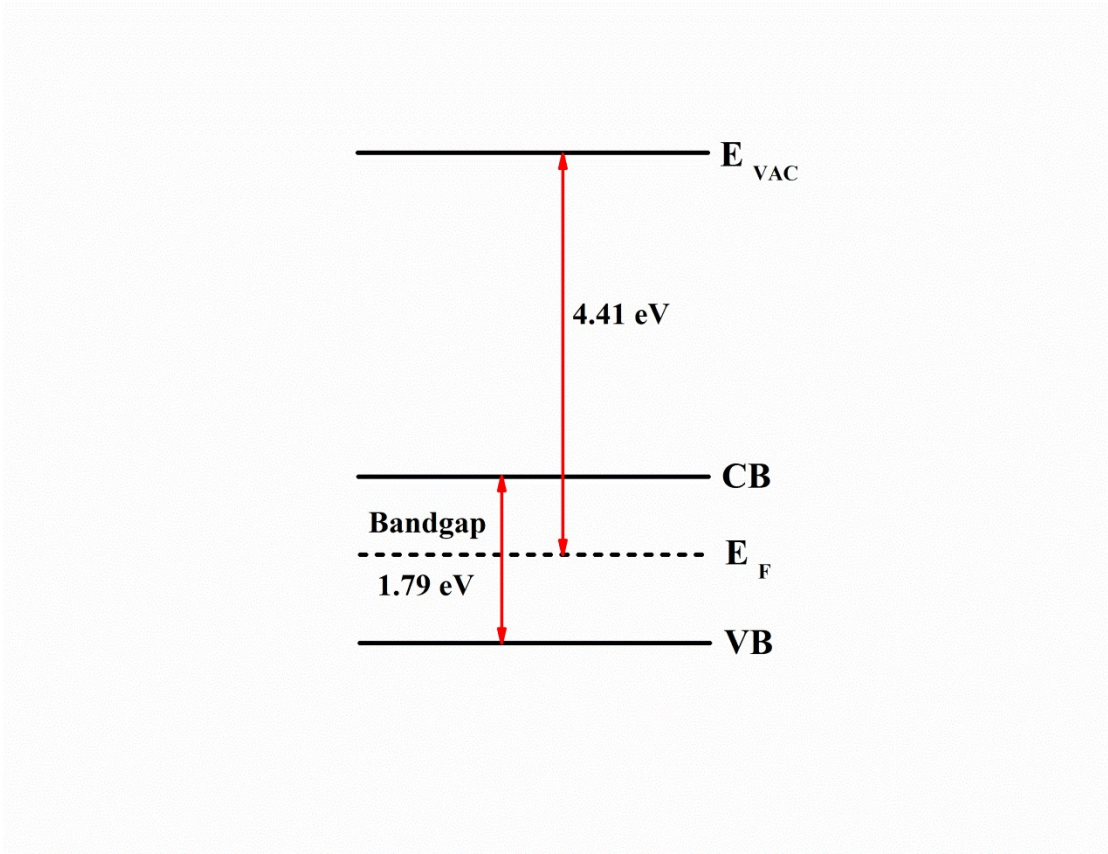

Fig. S3 The illustration of band structure for GP3.

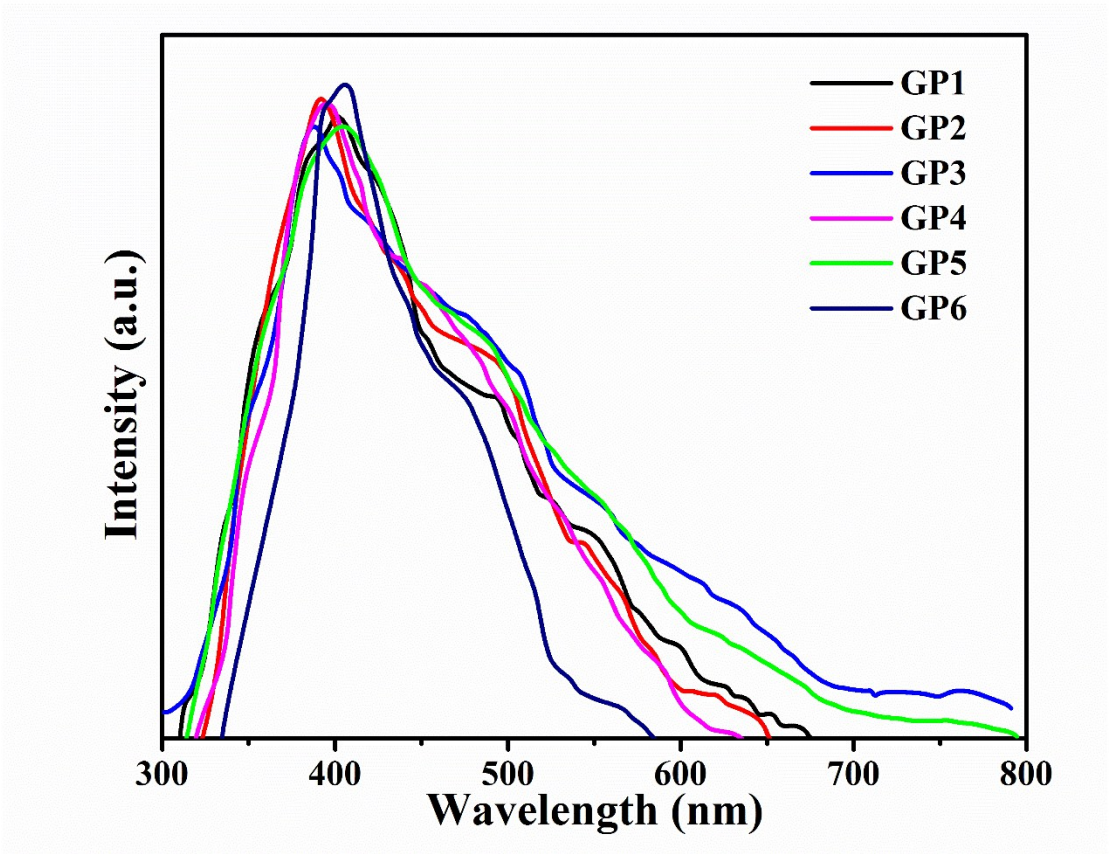

Fig. S4 The PL spectra of GP1, GP2, GP3, GP4, GP5 and GP6 obtained under 300 nm excitation.

Table S1 H_2 evolution rates of some metal oxide photocatalysts.

Photocatalyst	H_2 evolution rate (μmol h^{-1} g^{-1})	Reference
Phosphorus-doped graphene	672.3	This work
RuO_2/GaN:ZnO	193	[1]
$NiO_y/In_{1-x}Ni_xTaO_4$	33.2	[2]
Zr_2ON_2 with 5 wt% Pt	46	[3]
Cu_2O-rGO with 1 wt% Pt	264.5	[4]
$InVO_4$ with 1 wt% NiO_x	5	[5]
TaON-Ta_3N_4 with 3 wt% Pt	5.8	[6]
$CaTiO_3$ with 0.1 wt% Pt	20.4	[7]
$CaTiO_3$:Rh with 0.1wt% Pt	16.7	[8]
Cr-doped $SrTiO_3$ with 0.3 wt% Pt	84	[9]
Mn/Ru/Rh/Ir doped $SrTiO_3$ with 0.5 wt% Pt	0.67/2.3/57.3/28.6	[10]
Fe/Cr doped $La_2Ti_2O_7$ with 1 wt% Pt	20/16	[11]
$SnNb_2O_6$ with 0.4 wt% Pt	30	[12]
N-doped $Sr_2Nb_2O_7$ with 3 wt% Pt	93	[13]
$AgBiW_2O_8$ with 1 wt% Pt	24.2	[14]

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