Electronic Supplementary Information

High efficient photocatalytic hydrogen evolution of graphene/$YInO_3$ nanocomposites under visible light irradiation

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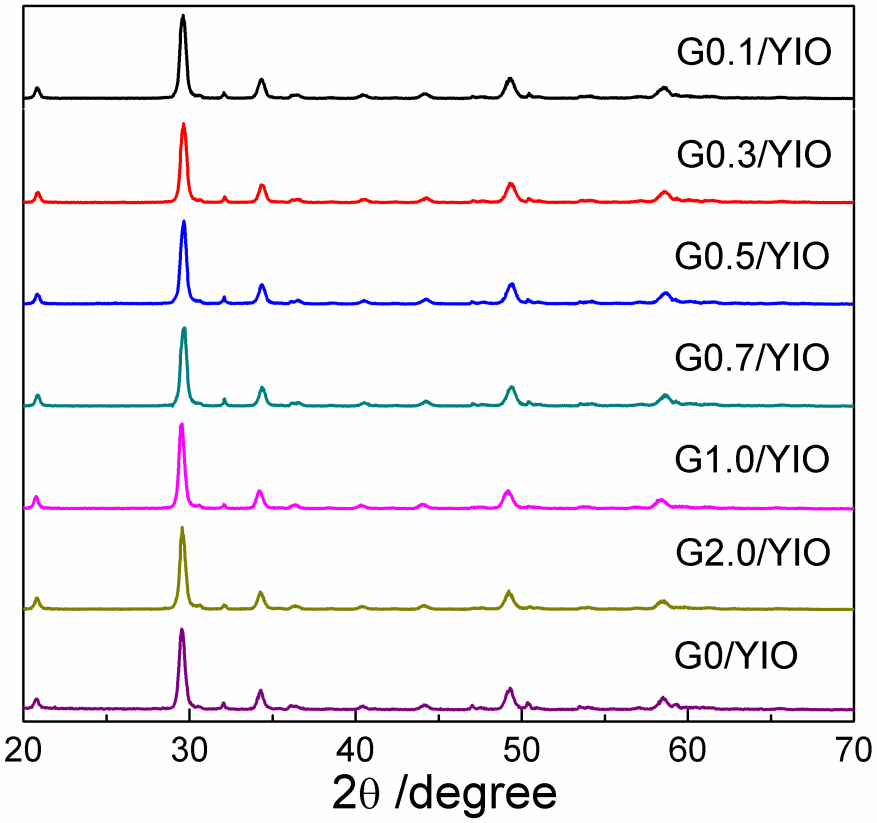

Fig. S1 XRD patterns of G/YIO nanocomposites with different graphene contents.

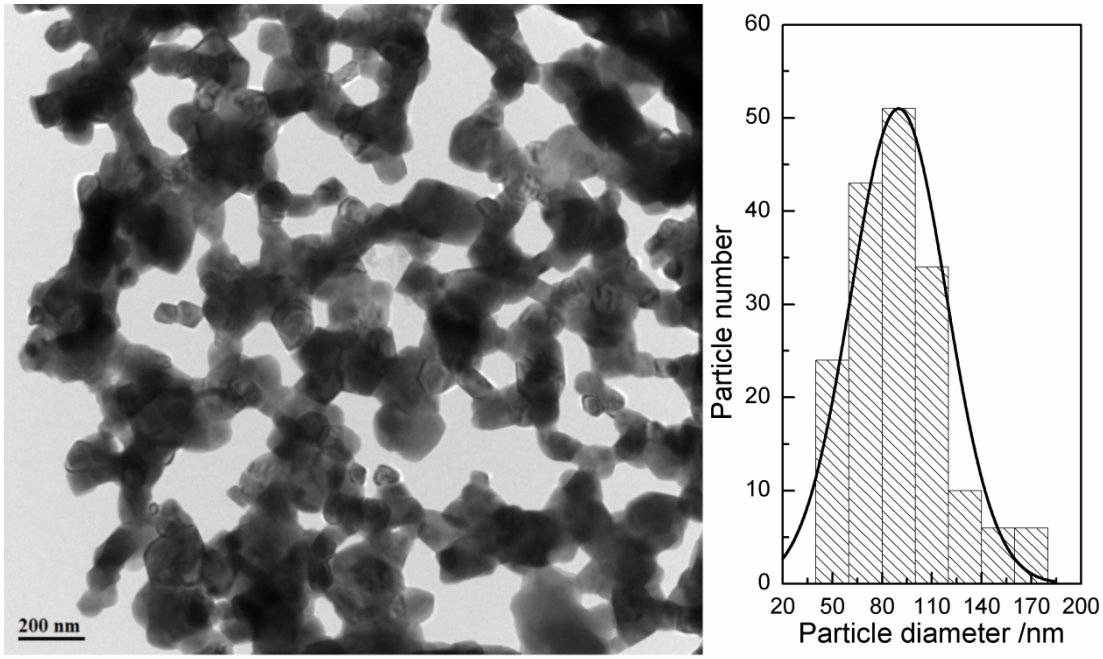

Fig. S2 The TEM image of YIO with different magnifications and the diameter distributions of YIO nanoparticles.

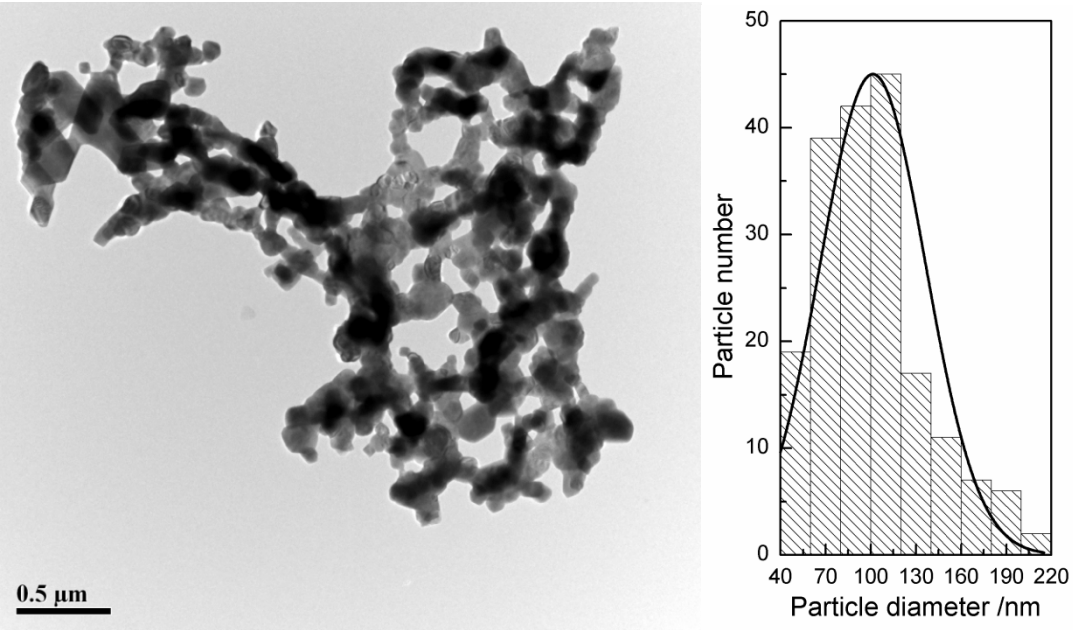

Fig. S3 The TEM image of YIO with different magnifications and the diameter distributions of YIO nanoparticles.

From Fig. S2† and S3†, it can be seen that YIO exhibits a fine rod or spherical shape and the particles linked end-to-end to form a net structure with a large degree of porosity. Because of overlap inside the net structure, we calculated the diameter distributions from the particles with clear boundary. The mean diameter was about 100 nm.

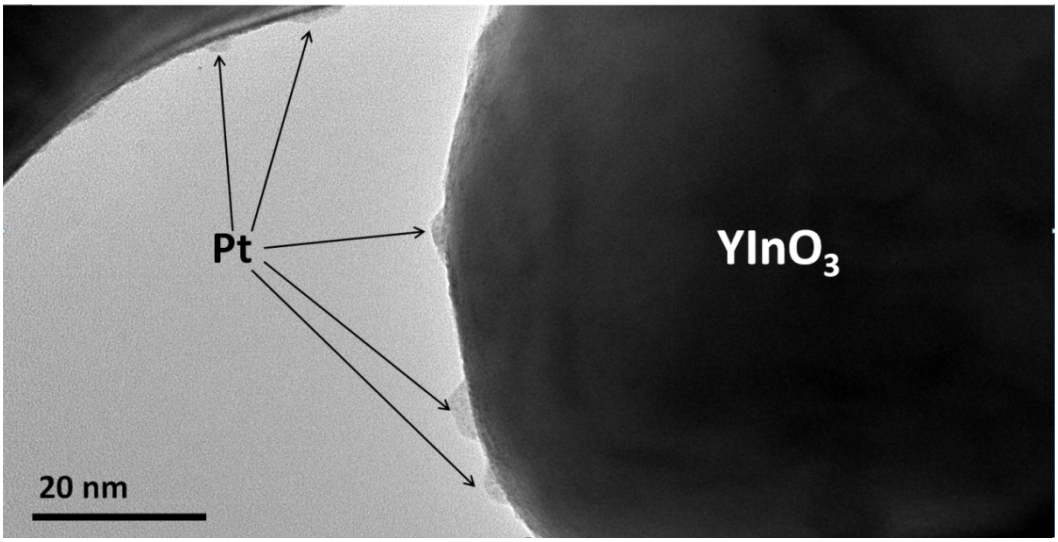

Fig. S4 The TEM images of Pt0.5/YIO composite.

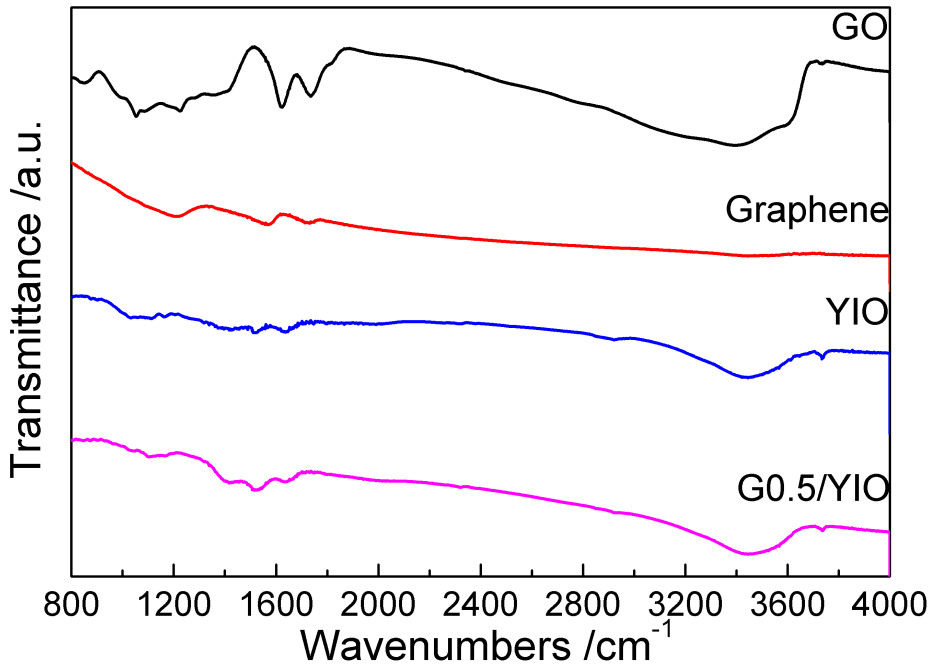

Fig. S5 FTIR spectra of GO, graphene, YIO and G0.5/YIO nanocomposite with different magnifications.

Table S1 BET surface areas of G/YIO nanocomposites. Unit: $m^2 g^{-1}$.

Samples	G0/YIO	G0.1/YIO	G0.3/YIO	G0.5/YIO	G0.7/YIO	G1/YIO	G2/YIO
S_{BET}	7.64	8.58	10.17	13.26	13.88	17.13	19.29

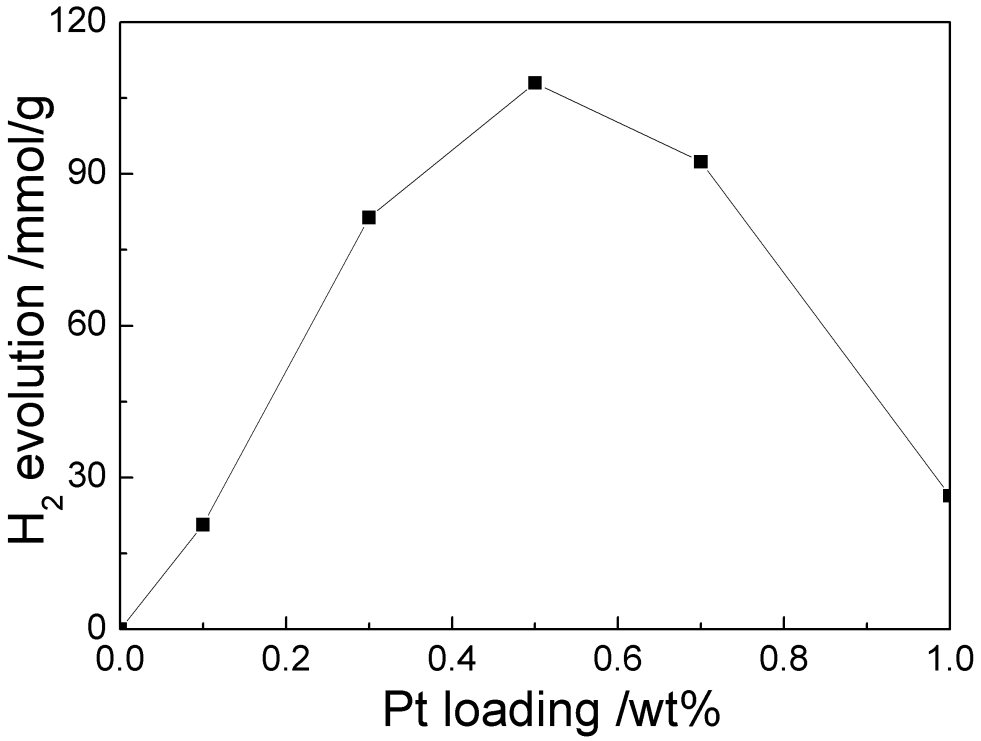

Fig. S6 Photocatalytic activities of Pt-dispersed YIO nanoparticles as a function of Pt amount.

The influence of the amount of Pt loading on photocatalytic activity of Pt/YIO composites is shown in Fig. S3. In the absence of Pt, the photocatalytic activity was negligible for pure YIO. The addition of Pt significantly promoted the H_2 evolution. The activity increased with increasing the Pt loading and reached the maximum at Pt loading of 0.5 wt%. Further increase resulted an obvious activity fall.

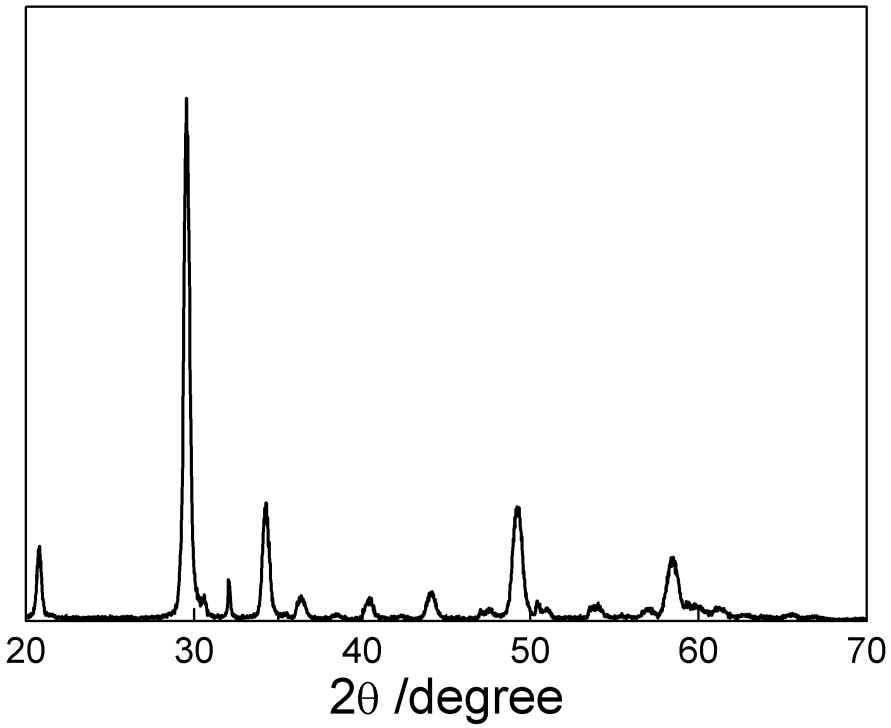

Fig. S7 XRD pattern of G0.5/YIO nanocomposite after photocatalytic reaction for 40 h.

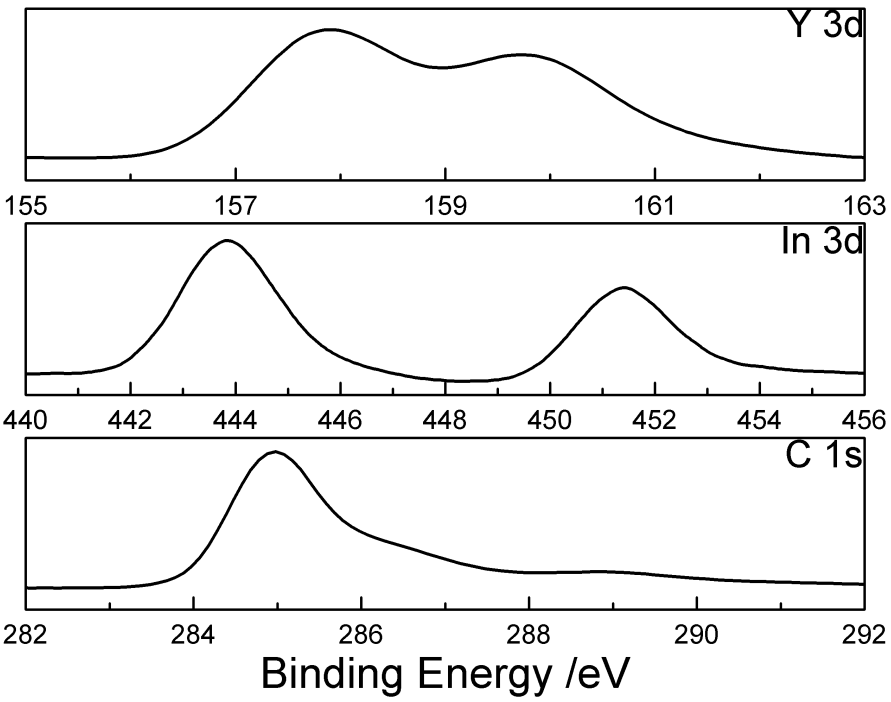

Fig. S8 XPS spectra of Y 3d, In 3d and C 1s for G0.5/YIO nanocomposite after photocatalytic reaction for 40 h.