

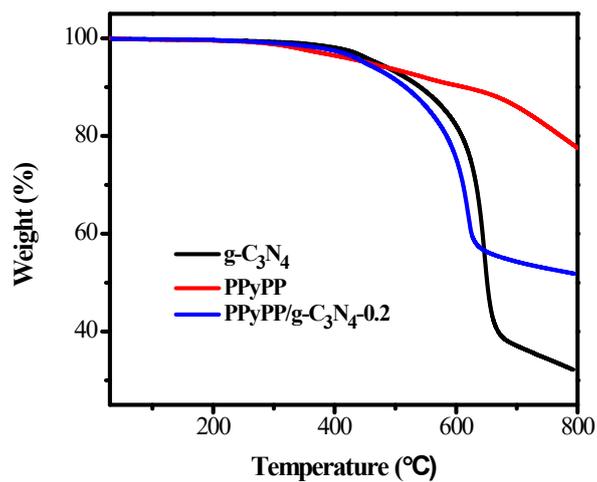
# **In situ construction of S-scheme heterojunction conjugated polymer/g-C<sub>3</sub>N<sub>4</sub> photocatalysts for enhanced H<sub>2</sub> production and organic pollutant degradation**

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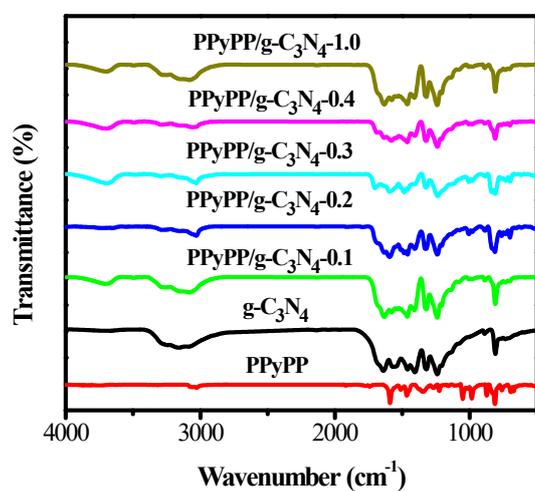
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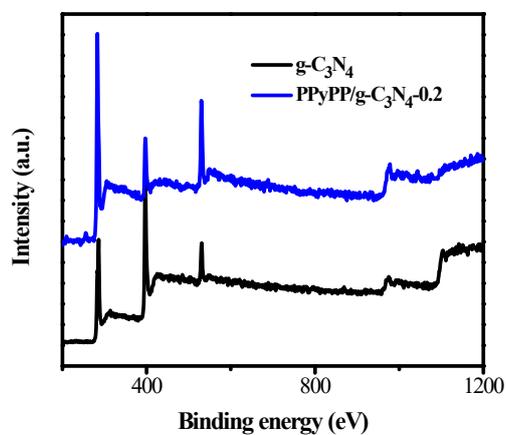
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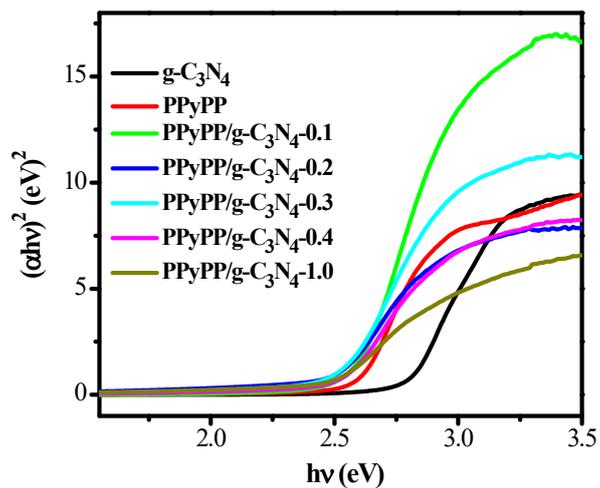
**Fig. S1.** Thermogravimetric analysis trace of  $g\text{-C}_3\text{N}_4$ , PPyPP, PPyPP/ $g\text{-C}_3\text{N}_4\text{-0.2}$  composite under a nitrogen atmosphere with a heating rate of  $10\text{ }^\circ\text{C}/\text{min}$ .



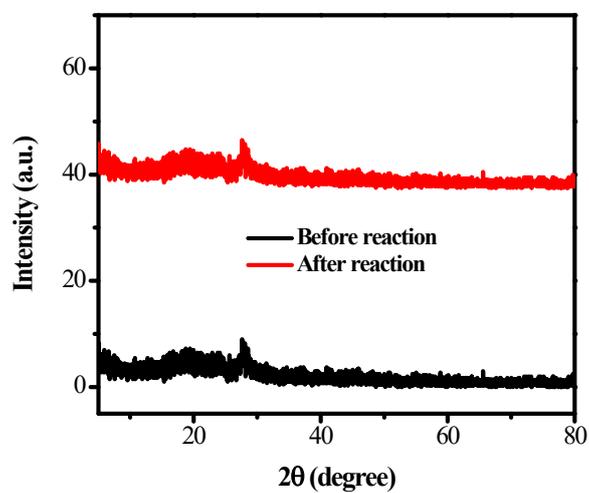
**Fig. S2.** FT-IR spectra of  $g\text{-C}_3\text{N}_4$ , PPyPP, PPyPP/ $g\text{-C}_3\text{N}_4$  composites.



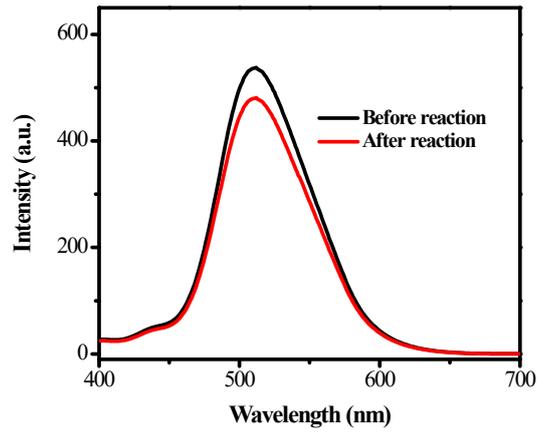
**Fig. S3.** XPS survey spectra of PPyPP/ $g\text{-C}_3\text{N}_4\text{-0.2}$  composite.



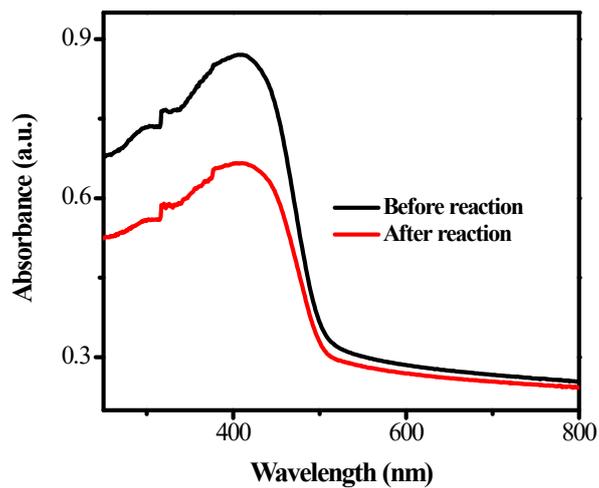
**Fig. S4.** Plots of  $(Fhv)^2$  vs photon energy ( $hv$ ) for the band gap energy for all samples.



**Fig. S5.** Power XRD spectra of PPyPP/g-C<sub>3</sub>N<sub>4</sub>-0.2 composite before and under light irradiation for 15 hours in a triethylamine/water mixture.



**Fig. S6.** Photoluminescence spectra ( $\lambda_{\text{ex}} = 365 \text{ nm}$ ) of PPyPP/g-C<sub>3</sub>N<sub>4</sub>-0.2 composite before and under light irradiation for 15 hours in a triethylamine/water mixture.



**Fig. S7.** UV-vis DRS of PPyPP/g-C<sub>3</sub>N<sub>4</sub>-0.2 composite before and under light irradiation for 15 hours in a triethylamine/water mixture;