Supplementary Materials:

Table S1. BET surface area, mean pore diameter, and total pore volume of two samples.

Photocatalyst	BET surface area ($m^2 \cdot g^{-1}$)	Mean pore diameter (nm)	Total pore volume ($cm^3 \cdot g^{-1}$)
pCN	15.3	37.8	0.10
D149/pCN	14.7	23.5	0.09

Table S2. Comparison of H_2 evolution rate of dye-sensitized g-C_3N_4 under visible light irradiation.

Catalyst	Light	Co-catalyst	Electron donor	H_2 Rate ($\mu mol \cdot h^{-1} \cdot g^{-1}$)	References
N3/g-C_3N_4	Xe 300 W	Pt	TEOA	1490.7	[31]
N719/g-C_3N_4	Xe 300 W	Pt	TEOA	2500.1	[31]
PY-1/g-C_3N_4	Xe 300 W	Pt	AA	5508.1	[37]
Chlorin e6/g-C_3N_4	Xe 300 W	Pt	TEOA	1275.6	[39]
Protoporphyrin/g-C_3N_4	Xe 300 W	Pt	TEOA	1153.8	[40]
mTHPC/g-C_3N_4	Xe 300 W	Pt	TEOA	1041.4	[41]
Ppa/g-C_3N_4	Xe 300 W	Pt	TEOA	1093.0	[42]
Eosin Y/g-C_3N_4	Xe 300 W	Pt	TEOA	1810.0	[27]
MgPc/g-C_3N_4	Xe 300 W	Pt	TEOA	39.0	[79]
ErB/g-C_3N_4	Xe 300 W	Pt	TEOA	6525.0	[80]
Eosin Y/g-C_3N_4	Xe 300 W	Pt	TEOA	3850.0	[81]
D149/g-C_3N_4	Xe 300 W	Pt	TEOA	2138.2	This work

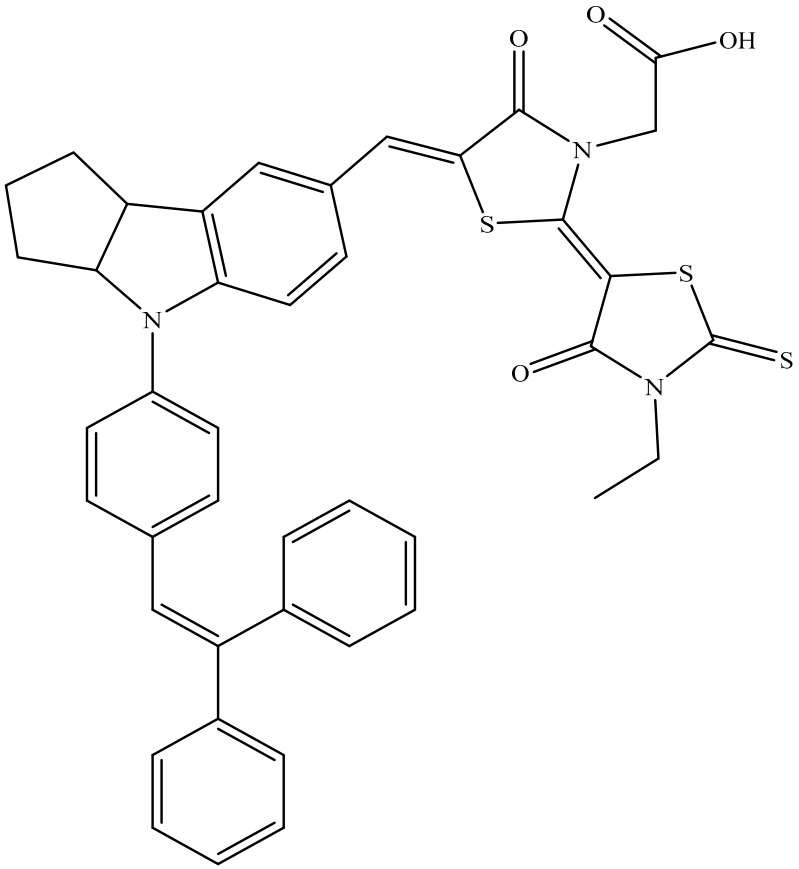

Figure S1. Chemical structures of D149 dye.

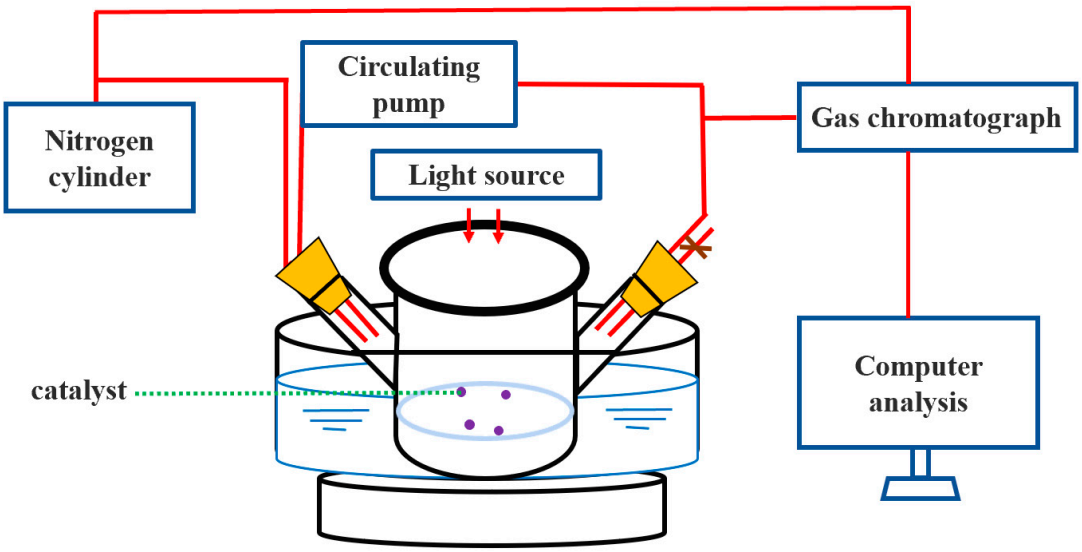

Figure S2. The schematic hydrogen production system.

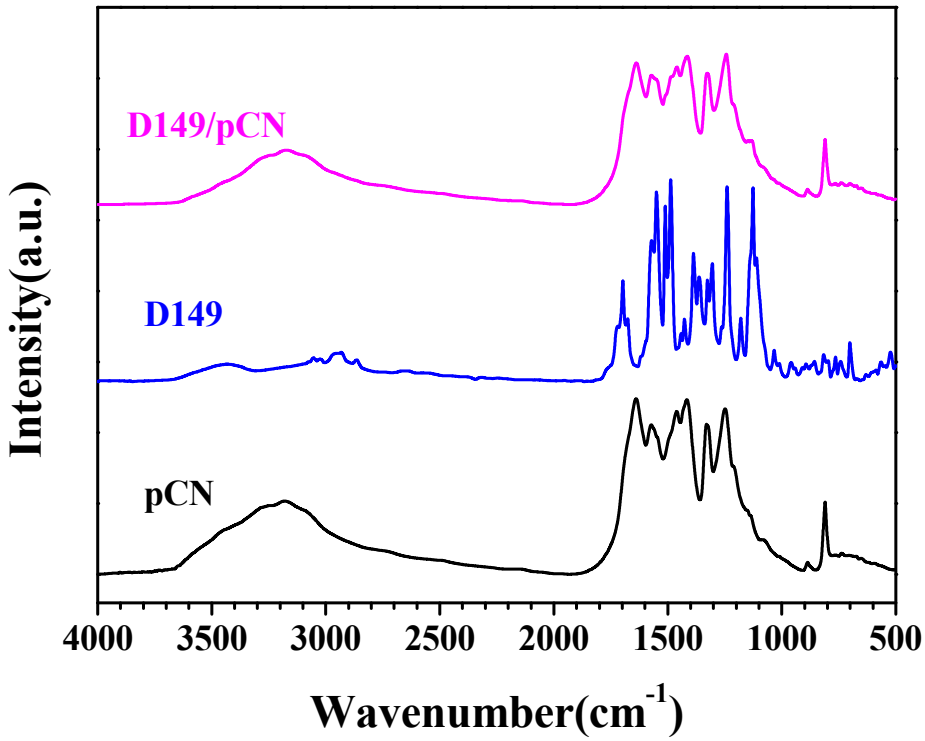

Figure S3. FT-IR spectra of pCN, D149, and D149/pCN.

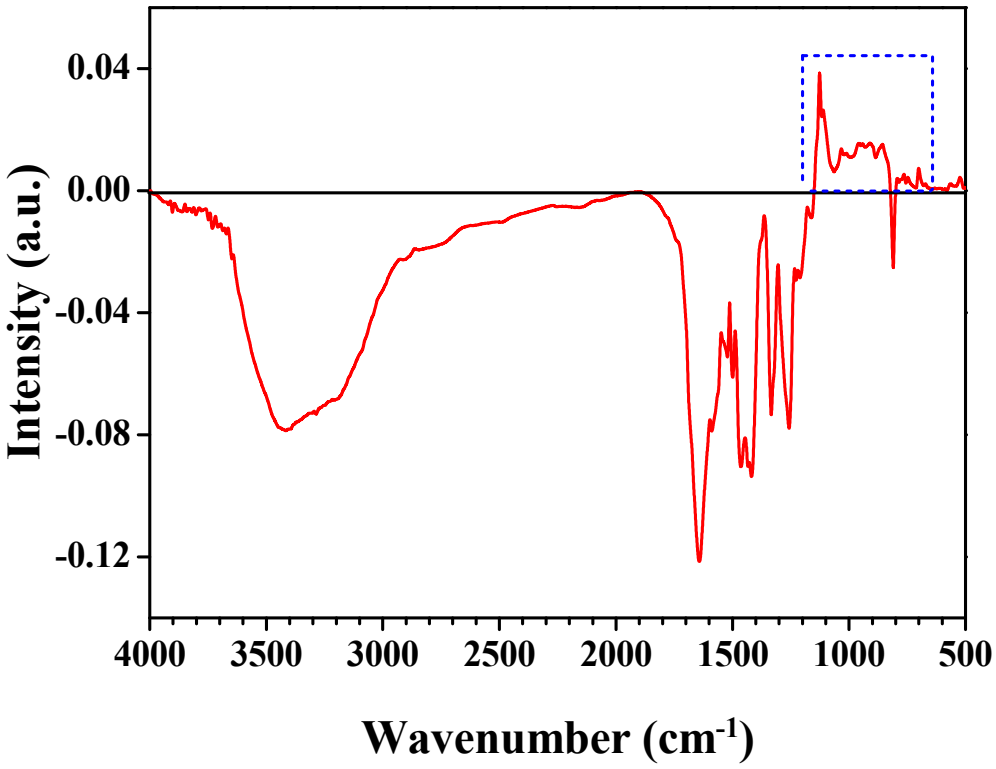

Figure S4. The differential spectra obtained by subtracting the spectrum of pCN from D149/pCN.

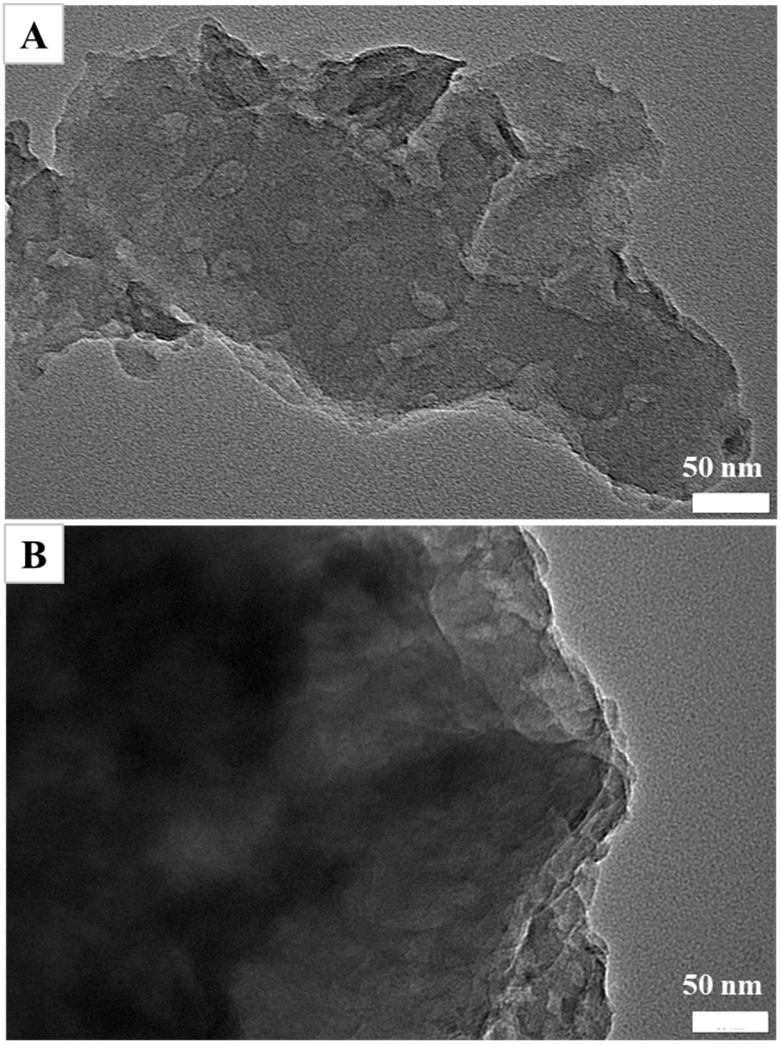

Figure S5. TEM images of pCN (A) and D149/pCN (B).

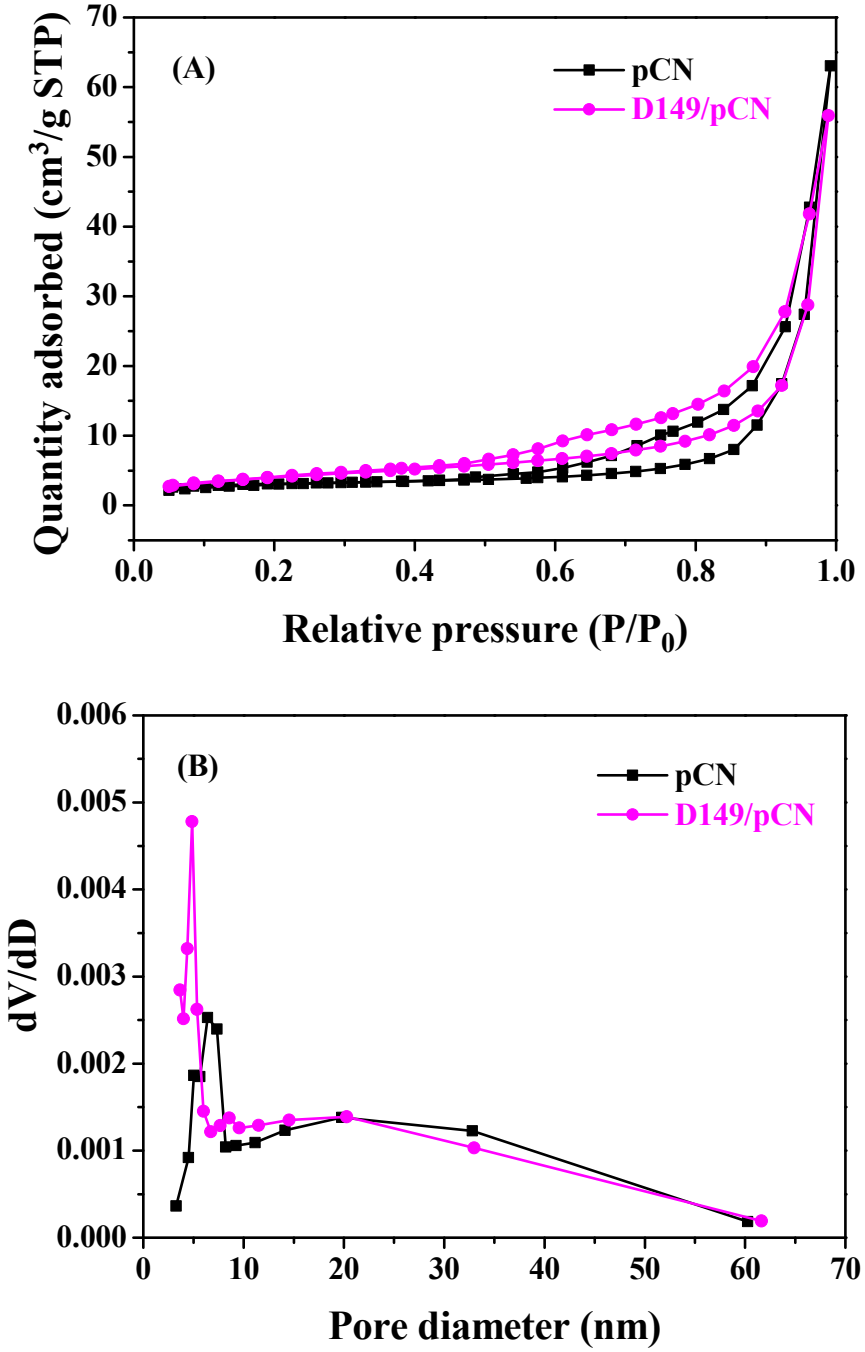

Figure S6. (A) N_2 adsorption-desorption isotherms and (B) pore diameter distribution curves from BJH adsorption curves of pCN and D149/pCN.

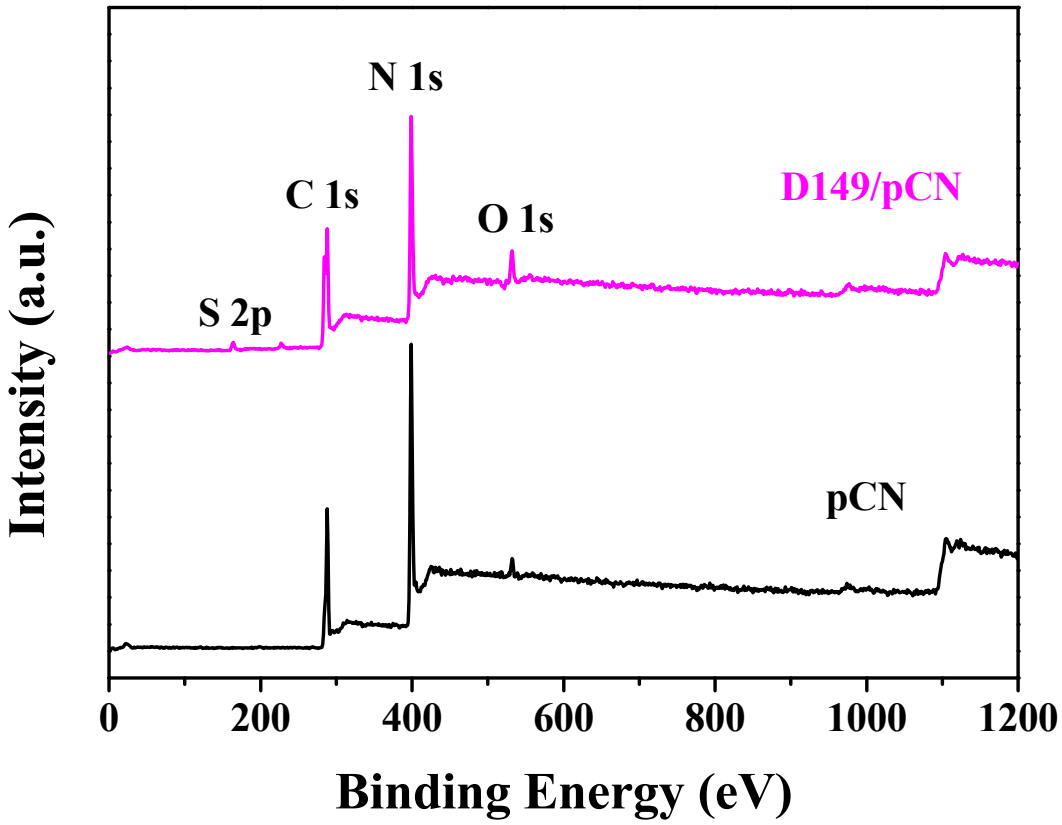

Figure S7. XPS survey spectra of pCN and D149/pCN.

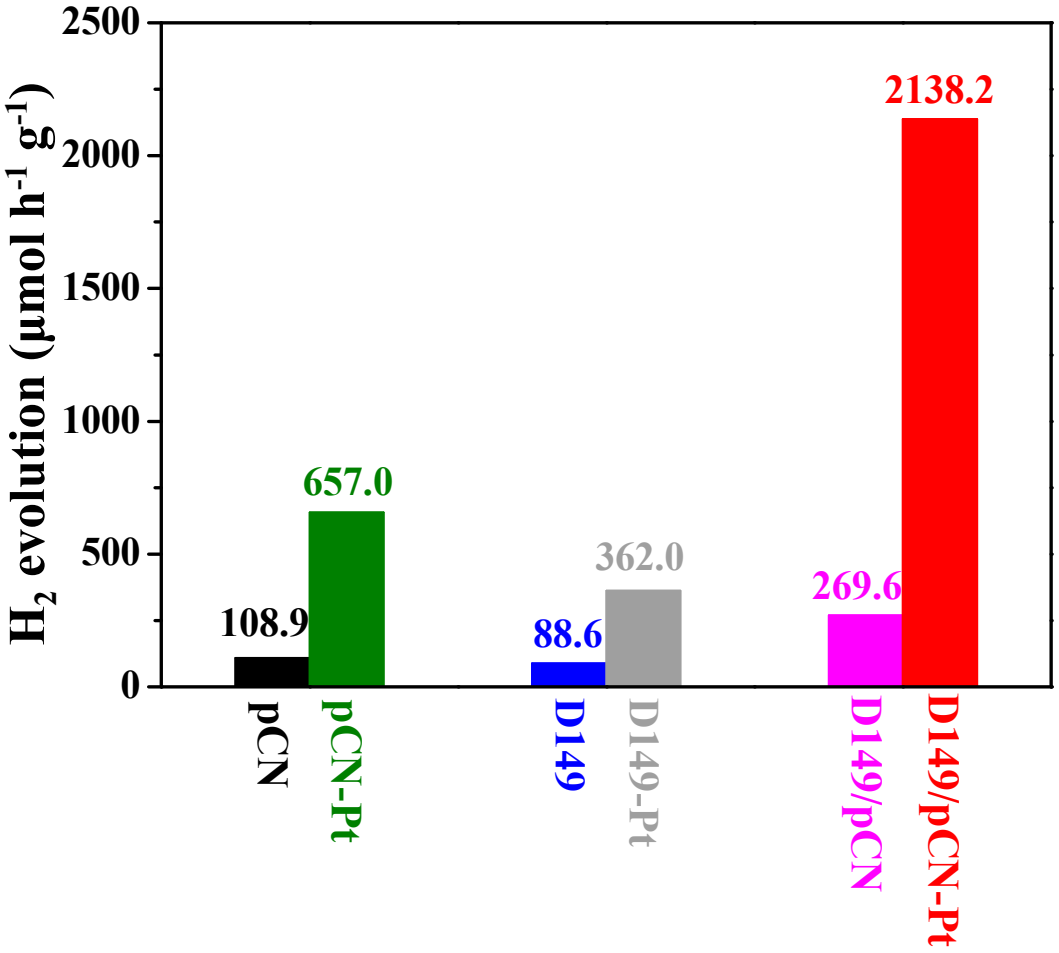

Figure S8. verage H_2 evolution rates of the three samples with and without Pt in 4 h under visible light ($\lambda > 420$ nm).

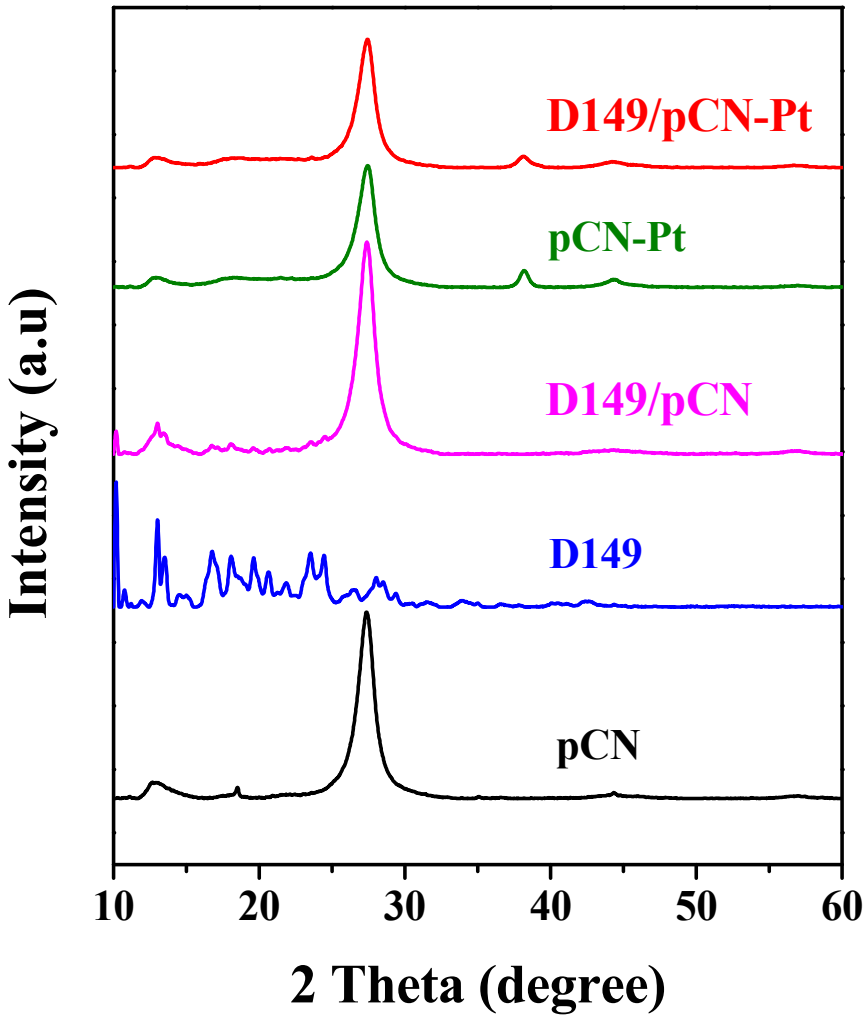

Figure S9. XRD patterns of pCN, D149, D149/pCN, pCN-Pt, and D149/pCN-Pt.

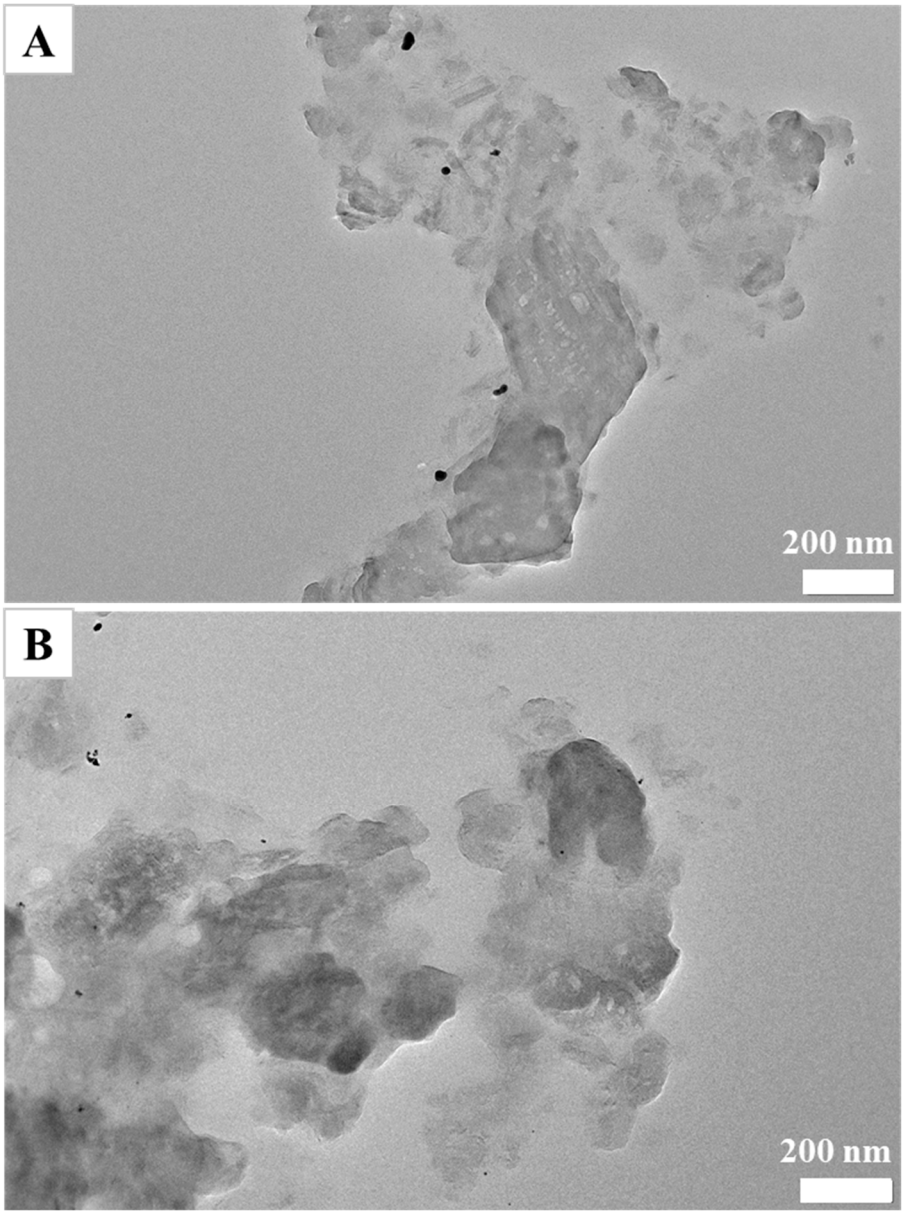

Figure S10. TEM images of pCN-Pt collected after reaction for one time (A) and D149/pCN-Pt collected after the recyclability test (B).

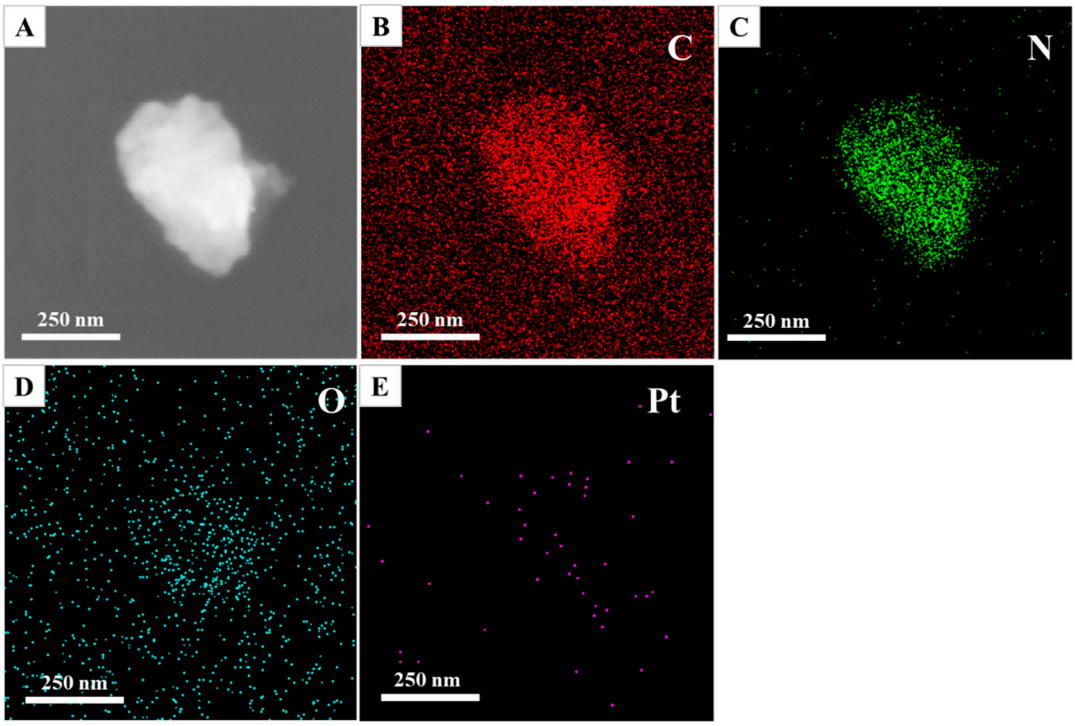

Figure S11. A typical STEM image of pCN-Pt collected after reaction for one time (A) and EDX mapping images of C (B), N (C), O (D), and Pt (E).

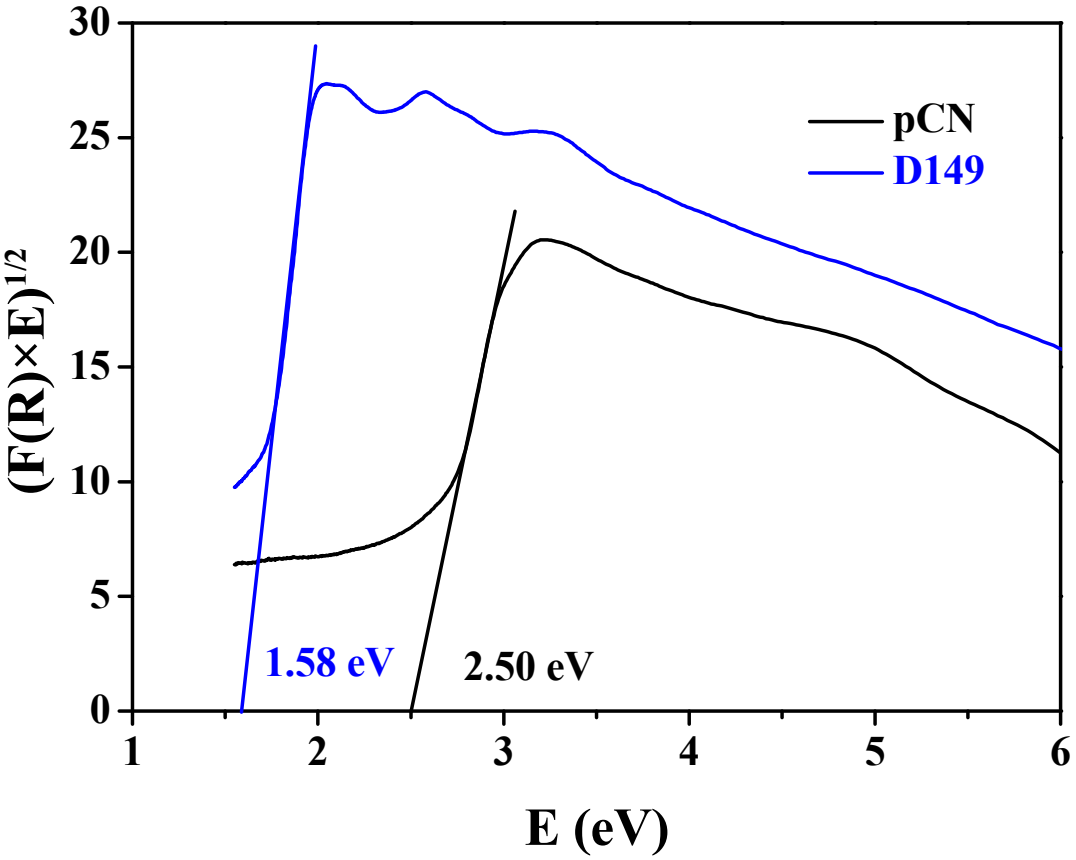

Figure S12. Band gap curves of pCN and D149.

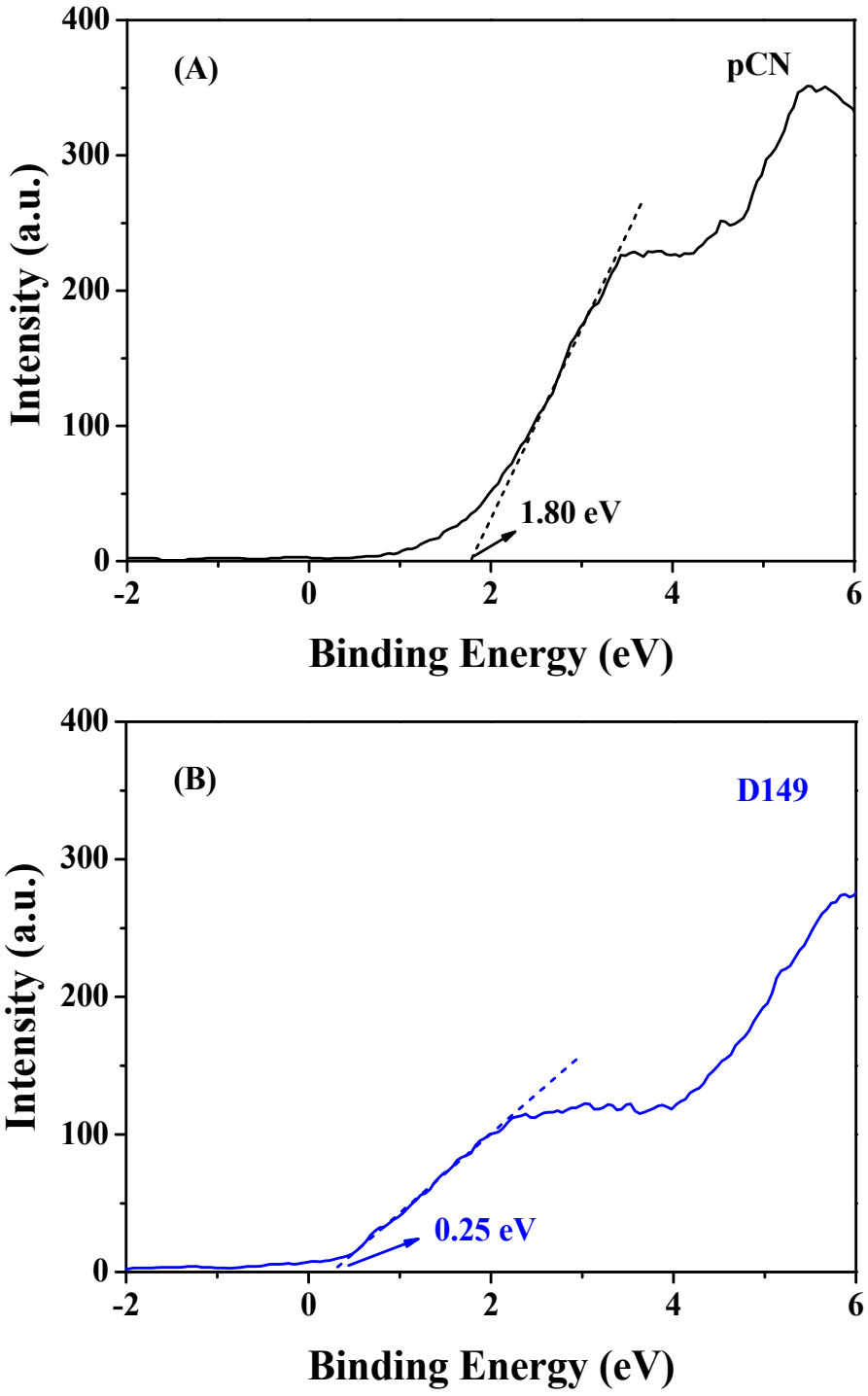

Figure S13. E_{VB} values of pCN (A) and D149 dye (B).